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HOOKWORM DISEASE

ITS RAVAGES, PREVENTION AND CURE *

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Hookworm in sections in which it prevails is one of the most common, most insidiously harmful, and most easily prevented diseases known to man. It causes human suffering and economic waste altogether out of proportion to its apparent death-rate. Many ills which have been attributed to mental and moral weakness of whole bodies of people are now definitely known to be due to this infection, and curable with its cure. Its eradication is one of the most important and pressing problems before the people of the southern half of the United States and of other semitropical and tropical lands. Moreover, the progress which has been made in recent years completely demonstrates at once the vast benefit, in terms both of human happiness and of industrial efficiency, attendant on stamping out of the disease, and also the complete adequacy, in stamping it out, of perfectly simple precautions prescribed by the primary rules of health and even of common decency.

WHERE HOOKWORM DISEASE IS FOUND

Hookworm disease is found more or less prevalent in the entire zone lying within 30 degrees north and 30 degrees south of the equator, or in practically all the tropical and semitropical countries, in which are more than half the people of the globe. In many of these countries this anemia-producing infection is extremely prevalent, in a severe form. In Porto Rico and the low-lying districts of Colombia, and in many of the sugar plantations of Ceylon and Dutch Guiana, for example, infection was found to involve 90 per cent. of the entire population. Since 1904 more than 300,000 persons have been treated for hookworm disease in Porto Rico, with the result that, whereas in 1900 and 1901 the deaths from anemia numbered 11,875, or 33.2 per cent. of the total deaths in the island, and in 1902 and 1903, after some treatent for hookworm, 6,830; they had fallen in 1904 and 1905 to 4,693, and continued to decrease until they were in 1906 and 1907 only 1,134, and in 1907 and 1908, 1,785. The majority of Porto Ricans, long noted for laziness and shiftlessness because of this anemia, are now known to have been the victims of a specific infectious disease; the wholesale treatment of which is revolutionizing the island, and bringing health and prosperity where almost universal misery and poverty reigned.

In the United States, the disease is found throughout the states south of the Potomac and Ohio rivers, in Arkansas, Missouri, Oklahoma, and Texas, and also in California. Its prevalence and severity vary widely within the state and even in a county, in some localities less than 1 per cent. of the people being infected, and in others more than 90 per cent. Generally speaking, the heaviest infection is found on the light, sandy soil of the coastal plains, the lightest infection on the stiff, clay soil of the Piedmont region, and an intermediate infection among the foothills and mountains. It is peculiarly a disease of the agricultural districts, which goes far to explain the long-puzzling lack of physical and intellectual vigor to be noted among large classes of people in what ought to be one of the healthiest and most prosperous sections of the country (Figs. 1, 2 and 3). Examination of more than 415,000 school children during the four years 1910-1913 in 413 counties of the eleven Southern states has revealed 43 per cent. of them infected. Of more than 700,000 persons of all ages taken at random in the same territory, 35 per cent. were found to be suffering from this disease, and in a vast majority of cases were completely cured.

When individual treatment has been accompanied by simple sanitary reforms to prevent reinfection, most noteworthy benefits have been derived by entire communities. For example, in the camps of the Continental Coal Corporation, at Pineville, Ky., where 1,800 men were on the company's pay-rolls, in June, 1911, about 65 per cent. were infected with hookworm, there were about 150 cases of typhoid, and cases of bowel complaint were numerous. Soil pollution through lack of sanitary water-closets was practically universal, the water-supply was contaminated, and flies had free range. Measures were taken to eradicate the hookworm by providing sanitary closets, which stopped soil pollution and prevented flies from carrying the infection back into the houses, and the water supply was also safeguarded. As a result, in the year following, the same force of men loaded over 33 per cent. more coal on the cars than they did in the year before. Also there was not a single case of typhoid in the camps during the summer of 1912, and cases of diarrhea were reduced to about one-half.

HOW THE HOOKWORM AFFECTS ITS VICTIMS

For generations hookworm disease has been insidiously spreading unrecognized and unchecked over the countries of the globe having a mild climate. Its victims, numbering many millions, have through centu-

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ries, no doubt, been hosts to the small blood-sucking intestinal parasite which causes the disease. Their strength has been sapped, their vitality lowered, their physical and intellectual growth stunted. They have been mastered in war, commerce and industry by the more hearty people of colder latitudes to the north. The social and economical importance of the disease is therefore almost beyond comprehension. The infection is in most instances so insidiously acquired by the unsuspecting victim that he and the members of his family, who are probably likewise being infected, do not know just when the effects of the disease began to manifest themselves. In the course of a few summers, however, a once healthy family has become pale and puny; a once industrious family has become languid and backward in its work; a once prosperous family has fallen into debt; a once proud family, owning valuable property, has been reduced by an easily curable and easily preventable disease to tenancy and to poverty. The children, once bright and well advanced in their school classes, begin to lose their zeal and their mental alertness when gradually robbed of their vitality. They fall behind in the struggle with their healthier classmates, and, finally discouraged and perhaps abused, give up school work in despair.

Fig. 1.—Effects of hookworm disease: *A*. Small boy is H. M. of Heber Springs, Ark., called "Chalky" from the extreme pallor of his face. "Chalky" is 18 years old, weighs 82 pounds, and uses chewing-tobacco, snuff and profane language. He is uncle of the larger boy, is two months older and 50 pounds lighter than his nephew, who is not infected. *B*. Three heavily infected children, aged 13, 9 and 7 years, of Wise County, Va. The boy was treated for consumption. Twenty grains of thymol brought 234 hookworms, a dwarf tapeworm and almost complete recovery. *C*. Boy, I. S., of Stokes County, N. C., severely infected. Note the "angel wings" shoulder-blades and the "pot-belly," characteristic symptoms.

GREAT ECONOMIC LOSS DUE TO THE HOOKWORM

This is no exaggerated picture of the harm wrought by the disease. The economic loss already stated in the case of the Kentucky coal-miners is to be found wherever the disease prevails. The physically sound coffee-picker in Porto Rico picks from 500 to 600 measures of coffee a day. Dr. Wickliffe Rose reports that he found scores of infected men there who could pick only from 100 to 250 measures a day, and the manager of one of the great haciendas, or plantations, told him that the disease had reduced the average efficiency of labor on the coffee estates to from 35 to 50 per cent. of normal. One of the largest cocoa plantations in Ecuador reports that 300 laborers on the place were so reduced by the anemias of hookworm and malaria as to be able to do not more than one-third of a reasonable day's work. The manager of a large British Guinea sugar estate reports that treatment for hookworm has doubled the working power of the gangs. A single California mine employing over 300 men is estimated to have lost 20 per cent. of the wages paid, or $20,000 a year, because it had to carry on the pay-roll a large body of men to replace those periodically unable to work because of hookworm anemia. In the South Atlantic and Gulf states the infection is heavier than in California, and the loss on the farms and in the cotton factories is enormous. The weavers in the Southern mills are not naturally inferior to the European immigrants who operate the New England looms. Their labor is less efficient in some instances because vast numbers of them are victims of the hookworm. The Southern farms are not lacking in fertility, nor are their owners, whose fathers fought under Lee and Jackson, lacking in sterling virtues; but thousands of men and women with the best blood of the land in their veins are made improvident and slothful by this infection, and the hundreds of cases in which these supposed faults of character have been reformed by hookworm treatment prove beyond question the enormous moral and economic cost of the disease.

GROWTH OF CHILDREN RETARDED

Hookworm retards the development of children to a remarkable degree. School and college records show that infected students, even though not apparently ill, average lower in their studies than those found free from infection. In one woman's college the average standing of fifty-six girls found infected was 77.75 per cent., whereas fifty-six girls taken at random from those in the institution found free from infection averaged 89.28 per cent. Similarly in an academy, a group of twenty-five infected men and boys averaged 64 per cent., and a non-infected group beside them averaged 86 per cent. Teachers in all parts of the South report marked improvement in zeal and intelligence, as well as in weight and physical appearance of children immediately on being freed from the parasites. One case from the field director of the hookworm campaign in Prentiss County, Miss., may be given as fairly typical of the experience of physicians in this work.

"A young man that we treated furnished us the best recommendation that we could have had. He came to the office about the third week looking as if he had an advanced case of tuberculosis, and with a cough that appeared serious. He was such a picture of dejection, misery and lost hope, that he attracted the attention of the whole court-house crowd and many of them watched eagerly to see the results of the examination. One man asked me after he left, if I could cure him, and I replied that we would do our best. This man then kindly stated that he thought that I was doing the boy an actual wrong by holding out hope, as it was his belief that the boy would die in a very short time. This boy was instructed to return every week for his treatment until informed that he was cured. He did; and it was a standing request by the court-house officials that they be called each week as W. L. came in, so that they could see for themselves whether he was improving or not. On his first trip, one week later, he came in, and there was evidence of much improvement. He came in with a smile, showing more interest in things around, telling jokes to fellows in the office, when just one week before he had stood listless without a word to any one except to answer 'yes' or 'no' when a question was put to him. He informed us that on this trip, although he had taken his medicine only a week ago, he was feeling a great deal better; and when placed on the scales, I found that he had gained a number of pounds in weight. He was given three treatments, one week apart, and after waiting two weeks following the third treatment, he was found free from infection, and weighed 18 pounds more than he did previous to the first treatment. On the day that he first appeared at the dispensary he could hardly walk, and the last time that I saw him he started with another boy to walk 7 miles to his home."

Fig. 2.—D. C. of Grant County, Ark., aged 16, practically an invalid from childhood, has been treated for malaria and tuberculosis. She was found heavily infected with hookworms and was given treatment.

Fig. 3.—D. C. as she is to-day.

THE PENALTY OF IGNORANCE AND NEGLECT

Such facts, of which hundreds of the same import might be cited, show the heavy price which the people of the South have been paying in loss of money, health and intellectual power, for ignorance and carelessness concerning a disease which is easily diagnosed, easily cured and easily prevented. It is due solely to neglect of sanitation which permits the eggs of the small intestinal worms which pass with the excreta from the bowels of infected persons to find lodgment on the soil, and then hatch into infective larvae ready to carry the disease to some other human being or reinforce the infection of the original victims.

There is no other disease perhaps which is so well understood in every detail, and which can be so satisfactorily explained to a layman. Nor is there any other widely prevalent disease against which the lay community can so readily and surely protect itself by simple precautions. Its conquest virtually resolves itself into a problem of education against soil pollution.

The largest possible public therefore should be brought to know in detail the history of hookworm disease; the distribution and life cycle of the parasite causing it; its symptoms, method of cure, and, most important of all, means of absolute prevention.

HOW HOOKWORM DISEASE WAS FOUND

Hookworm disease is not new. It is only newly understood. The symptoms of the disease were described in the records of the Egyptian Empire, but its cause was not known. The hookworm itself was discovered in 1838 by Dr. Angelo Dubini, an Italian,

who while making a necropsy found the small white worm with its head buried in the membrane of the small intestine; but that this worm had anything to do with anemia was not suggested. When, however, in 1877, Grassi, another Italian physician, identified the eggs of this worm in the feces of anemic patients, it was suspected that the parasite was the cause of the disease. About the same time, Dr. Colomiatti, studying an obscure disease which had caused the death of many workmen on the St. Gothard Tunnel, discovered in the intestine of one of the tunnel victims more than fifteen hundred hookworms. This parasite, known as the Old World hookworm and named *Ankylostoma duodenale*, was carefully studied, its responsibility for certain types of anemia in Southern Europe demonstrated, and successful treatment for the disease developed.

The prevalence of hookworm disease in the New World was not recognized till much later. Nov. 24, 1899, Major Bailey K. Ashford of the United States Army Medical Corps, while treating anemia supposedly due to starvation caused by the hurricane in Porto Rico, identified the hookworm as the real cause of the wide-spread disease. He, however, supposed the parasite found by him to be the Old World type. In 1902 Dr. C. W. Stiles of the United States Public Health Service, having found the same disease in the Southern States, identified its cause as a different species of worm, now known as the New World type, or *Necator americanus*. It was then discovered that the worm found in Porto Rico was of this species.

Subsequent discovery of the same worm as the cause of anemia among the victims of the African lowlands suggests that the so-called New World type was brought to Porto Rico and the Southern states by the slave trade. This form also prevails in India, and has been carried to Jamaica, Trinidad and British Guiana by the Hindoo coolies brought there as laborers. The disease caused by one or the other of the two types of hookworm is now known in practically all tropical or semitropical countries, but all the worms look alike to everybody except the expert zoologists; they produce practically the same symptoms; substantially the same treatment is effective with all, and they can all be prevented by the same means.

HOW THE HOOKWORM LIVES AND WORKS

The hookworm in adult life is a small, round intestinal parasite about ⅓ inch in length, and about the size of No. 30 sewing thread. As a type it is found to infect man and numerous animals, such as the dog, the fox and the cow; but the particular species infecting man have not been found in animals, nor those of the lower animals in man. Only the type infecting man will be discussed here.

The life of the hookworm is made up of two periods. During the first period the worms are microscopic in size and live in the soil. It is in the soil that they hatch from microscopic eggs (Fig. 4) which were deposited there with the excrement from some person having hookworm disease. Neither the eggs nor the larval worms hatching from the eggs can be seen with the unaided eye. These minute worms will live for perhaps ten or twelve months under favorable conditions of warmth and moisture; but they cannot develop beyond this point unless they gain entrance into the body of some human being and find their way into the intestinal canal, usually the upper portion of the small intestine. The drying heat of the sun and the freezing weather of winter are destructive both of the development of the hookworm eggs and to the life of the larvae. For this reason the disease is rare in deserts and in countries having protracted cold weather. A porous, sandy loam soil, having reasonable shade, affords the most favored habitat for the hookworm larvae. Though in stiff clay soil conditions are much less favorable to these little worms, we often find that enough of them have lived and entered into the second period of their life's existence to cause heavy infection.

The second period of the hookworm's life is spent within the body of a human being. The great majority of the worms never reach this stage in their development. In fact, many of the eggs never hatch. Yet when we stop to consider that in some localities 90 per cent. of the people are severely infected, and that each infected person will daily cast off with the excreta from one to four million eggs on the soil, we can appreciate that even with this loss it will be almost impossible for one to escape infection in a section where wastes from the human body are not properly disposed of.

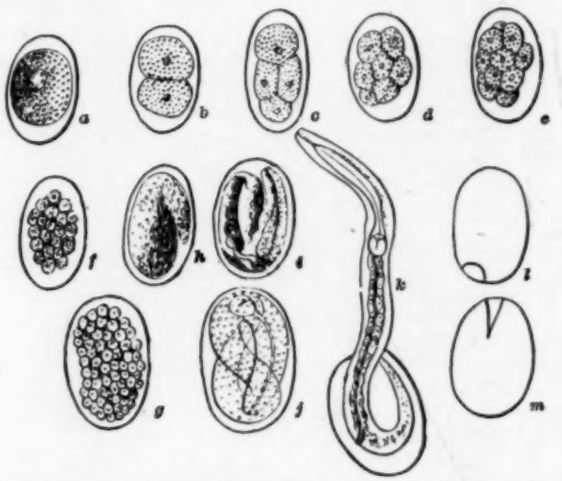

Fig. 4.—Development of Old-World hookworm: *a-g*, changes occuring in egg preparatory to developing of little worm; *h-k*, stages of the worm's development until it emerges from the egg-shell; *l*, *m*, empty egg-shells; greatly enlarged. (After Peroncito. Courtesy of C. V. Mosby Publishing Company.)

With these facts before us we at once want to know how these invisible filth-borne pests find their way to our small intestines. The answer may be a short story, but generally it is a long one.

It may be short because the little worms may cling to food which is swallowed by the unsuspecting victim. They may be carried on soiled hands; or, perhaps more frequently, may be swallowed along with uncooked foods, such as strawberries, plums, celery and lettuce, grown in or left to lie on ground polluted by human excreta.

Though some infection is thus taken through the mouth, the most of it is acquired through the skin in a very interesting way. In brief, this is the story of the hookworm's most common progress: Within a week of the hatching of the larvae they molt and shed their skin twice. They are protected by the second sheat, and are very tough. In this stage they possess the wonderful ability to burrow (Fig. 5) in a few minutes through the skin and to enter the tiny blood capillaries, where, carried along by the blood-

current, they make a long journey through the body to the heart and to the lungs. In the lungs the blood-vessels are too small to permit them to pass through, so they begin to burrow again, and soon find themselves in the air-spaces of the lungs. Crawling along these they reach the wind-pipe and then the throat. Once there the worms are swallowed with saliva and food, and thus by this long journey find their way to the intestine, where they fasten on its walls and begin their blood-sucking.

One would think that the hookworms would have great difficulty in penetrating the skin and the blood-vessels in the lung, yet they do it. The fact can be easily demonstrated by experiment. If the polluted soil in which the larvae are known to be is moistened and applied to the skin, the point at which they enter will become inflamed and an eruption will appear, which is commonly known to the barefoot boys and girls as "ground-itch." Moreover, by the end of eight weeks, examination and treatment will show the person to be harboring adult hookworms, even though it may have been demonstrated that he was not infected up to the time he was brought in contact with the polluted soil. It should be remembered that the presence of "ground-itch" or "dew-itch," even though the skin may heal quickly, usually means that hookworms have entered the body and are beginning to rob the victim of his blood and vitality.

The second period in the life history of the hookworms begins with their entrance into the intestinal canal. There the male and female worms, after molting twice again, develop to adult life. From five to eight weeks is usually required for their growth. When grown they may usually be seen with the unaided eye. At this stage they fasten on the wall of the intestine, live for many years, and do the harm to be described next. Besides this the females deposit thousands of eggs, which, being mixed with the excreta, pass out on the ground to spread the disease.

Now that we have followed the complete life cycle of the parasites, let us study the disease caused by the adult worm in the intestine.

THE EFFECTS OF HOOKWORM DISEASE

When we consider that several hundred hookworms may live in the intestine at one time, and that they may live there for from six to ten years—sapping the blood, wounding the intestine, and poisoning the body—it is not strange that the body becomes diseased. The blood is needed to collect oxygen in the lungs and the food from the intestine, and distribute them over the body. In the disease much blood is lost. Some of it is taken into the bodies of the worms, and a great deal more is lost by bleeding from the small wounds made by the worms. In severe cases of the disease, the blood is reduced to one-fourth or one-sixth of what it should be. In such cases we find the victim's normal color replaced by a pale, sallow complexion; the lips are pale; the mucous surfaces generally are pale, and the skin is of a pale, yellowish hue. The eyes are listless, the pupils dilated and not very responsive to light; often they present a blank stare, fish-like in character. The hair is dry and scant, especially in the armpits. The face and the ankles are often swollen, anemic ulcers frequently appear on the legs, and the abdomen is prominent, giving rise to the term "pot-belly." The chest is flat, and the shoulder blades stand out prominently, suggesting "angel wings." When the disease occurs during the growing period there is a marked retardation in development; that is to say, a boy or girl may not be developed at 18 beyond what would be expected of one at 13 or 14 years of age. The appetite is often perverted, so that the sufferer has a craving for a particular kind of food, and often for certain substances not foods. For example, victims of the disease frequently crave clay, and for this reason are termed "dirt-eaters." Again, coffee-grounds or salt may be the substance desired.

The intestinal wall is considerably damaged by the worms, and becomes tender to pressure over the pit of the stomach. Where the worms bite, raw surfaces are left, so that it is easy for any germs, such as may cause typhoid fever or tuberculosis, to get into the body and set up a disease more violent in character, and more frequently fatal, than hookworm disease. There may be severe headaches, lassitude, dizziness and inability to sleep. The heart is poorly nourished by the impoverished blood, yet it is called on to do the work necessary to keep the body supplied with oxygen from the lungs and food from the digestive

Fig. 5.—Slice of skin as seen under the microscope. Note how the younger hookworms are crawling through the skin. This is how "ground-itch" or "dew-itch" looks. (U. S. P. H. Service.)

tract. As a result, the heart's action becomes labored, so that hookworm disease is frequently mistaken for heart-disease or Bright's disease. Most of these cases can easily be cured by getting rid of hookworms.

It must not be inferred that every person who is infected with hookworms suffers with all the symptoms mentioned. Much of the infection is so mild that the presence of the disease might not be suspected. In cases of medium severity one or more of the symptoms will be present, but the existence of the disease cannot be confirmed until the eggs of the worms are demonstrated in the excreta by microscopic examination.

The disease, however, even in very mild cases, is a menace for two reasons: First, any infection exerts a handicapping influence on the victim. This has been shown among students who, though mildly infected, were underdeveloped in size and were backward in their studies; and, being below the standard, they were more subject to other diseases. Second, the persons mildly infected are carriers and distributors of the

hookworm eggs, and may become responsible for the disease in a severer form in themselves and in other persons.

HOW HOOKWORM DISEASE SPREADS

We have seen how each of the female hookworms living in the intestines deposits hundreds—often from twelve to fifteen hundred—of eggs daily; that these eggs do not hatch while they remain in the bowel, but after they have passed out on the soil, where there is moisture and warmth—but not too much—they hatch into larvae. Both the eggs and larvae are too small to be seen with the naked eye. The larvae remain invisible in size unless they can get into the intestine, which they may reach by being swallowed with food or by entering the skin, usually of the feet, there producing "ground-itch" or "dew-itch," and then making a long journey through the body until the intestine is reached.

When infected persons go from place to place they spread the infection. It is thought that the negro slaves brought the disease to America from the West Coast of Africa. Likewise, the disease may be carried from one community to another. Suppose we have a school district at A where there is no infection, and the people are healthy and thrifty; and from this community the son and daughter of Mr. Jones visit the Smiths in the distant community of B, where 75 per cent. of the residents have hookworm disease, and the soil is teeming with the larvae; that is to say, there is heavy soil pollution. Neither the Smith nor the Jones family pays much attention to the use of privies; indeed, there is much doubt if either has one; for out of 189,586 rural homes in the Southern states inspected by the Rockefeller Sanitary Commission, 95,988 were found to have no privies at all and 87,156 to have open privies which allowed wastes to spread freely through the soil. The sun is warm, and the Jones children go barefooted and contract "ground-itch." They eat strawberries and plums which have been on the ground. By the time their visit is over they have become infected with grown hookworms. Returning, they begin to pollute the soil at their home. The other members of the Jones family get the infection, and by the end of the summer they are all becoming pale and puny. The district school at A opens. The Jones children, though not in their usual health, go to school. The school has been equipped with many of the modern conveniences, but has not been provided with privies. The need of them was not really felt. The boys concealed themselves in woods and undergrowth to the east, and the girls to the west of the schoolhouse. The Jones children, not knowing they have a disease, of course, do not know they are spreading one when they use the common hiding-grounds. In ignorance of the disease and in ignorance of sanitation, which the school should be teaching in a practical way, the soil around the school becomes heavily polluted, and a center for spreading the disease from one family to another. Soon the community has hookworm disease. Sometimes every pupil in a school gets it. The people become sick, backward, lazy, poverty-stricken and "trifling"; no one seems to suspect when, how or why "hard times" overtook the community. Had there been sanitary privies in use by all the people of the district, the disease would have been limited to the two Jones children, and their infection would have been mild. This is so, because when the hookworm eggs are collected in a sanitary privy they never reach the soil where, by hatching into larvae, they can do the harm.

HOW THE DISEASE IS RECOGNIZED

Hookworm disease is recognized with certainty in two ways. If it is suspected from the clinical symptoms already described, the treatment, which is very simple and inexpensive, may be given. If the disease exists, the worms which cause it will be poisoned and dislodged by the medicine, and may be found in the stools. By washing the stools through one or two thicknesses of cheese-cloth, the worms will be left on the cloth, and may be seen and collected with ease.

The second method is the one commonly employed. Nearly a million persons have been examined in eleven Southern states by its use during the last four years. A small portion of the bowel movement is spread out thinly in water on a glass slide, and placed under a microscope. If the hookworm eggs, which are very characteristic in shape and size, are found, it is known that the hookworms are in the bowel, and that treatment for their removal should be taken. Hundreds of the best people, men, women and children in the South, are seeking examination by this method, and are putting aside all squeamishness in the determination to rid themselves and their communities of this pest.

HOW HOOKWORM DISEASE IS PREVENTED

There are two ways to get rid of hookworm disease: one is to prevent it, the other to cure it. Unfortunately as a people we are slow to apply preventive measures against disease. This means that we have too much disease, and, of course, that we rely too much on treatment. Preventive measures against hookworm disease are very simple. All that is necessary is to have the excreta of every person collected and disposed of in a way which will keep the hookworm egg from developing. If this should be done in every case, the hookworms, not multiplying in the intestine, would die in a few years of old age and the disease would become extinct.

Until this can be accomplished much infection can be prevented by wearing shoes. The barefoot boy is a great gatherer of hookworms. But the really effective protection from the disease is to be found in clean soil. That can be secured when sanitary privies are constructed and regularly used by all the people. Even if those persons now infected should refuse treatment, but could be induced or required to use sanitary privies, the country would in a few years be freed from the disease.

The common pollution of the ground about schools and farmyards must be stopped. The tumble-down shack and surface privy which allow their contents to be spread over the soil, by rains, hogs and chickens, or carried by flies to the houses, must be abolished, and replaced everywhere by the sanitary privy, the essentials of which are that it have a water-tight, fly-screened receptacle, and that the contents be disposed of in a sanitary way, by burning, fermenting, or burying away from and below the water-supply. Human excrement should not be used as a fertilizer unless thoroughly treated under competent direction; otherwise it may carry hookworms to fruit and vegetables.

An inexpensive privy which can be easily provided for the most simple farm or cottage has water-tight pails, tightly closed in, close-fitted door, and all openings covered with wire mesh to exclude flies.

Many communities are already putting in such privies, and there is a growing movement for placing them in every rural schoolyard of the South as a protection against hookworm, typhoid and other diseases.

All plans for privies approaching the ideal thus far presented seem to be too expensive or otherwise unpractical. The feeling is growing that some practical arrangement should be recommended, even though from the point of view of the idealist it is not without danger. We know that trains, automobiles and elevators are dangerous to a degree, yet no one would be so foolish as to advise that we avoid the use of these conveniences of civilization until the element of danger is absolutely eliminated. Working on this principle, sanitarians are now recommending as a minimum for a privy, first that a hole be dug in the ground; second, that a substantial box with a hole in the bottom be turned upside down over the hole in the ground and dirt banked around the lower edge of the box; third, that the hole in the box be covered when not in use; fourth, that the box be moved from time to time and the pit filled up with dirt. This privy may be built out in the bushes or it may be within expensively constructed walls. For all practical purposes an arrangement of this kind will eliminate hookworm eggs as a source of danger, and so long as it is fly-proof it will guard against the spread of typhoid fever by flies. If located a reasonable distance from the spring, or well, and below it, the danger of pollution is negligible, except perhaps in certain areas where the formation is largely limestone.

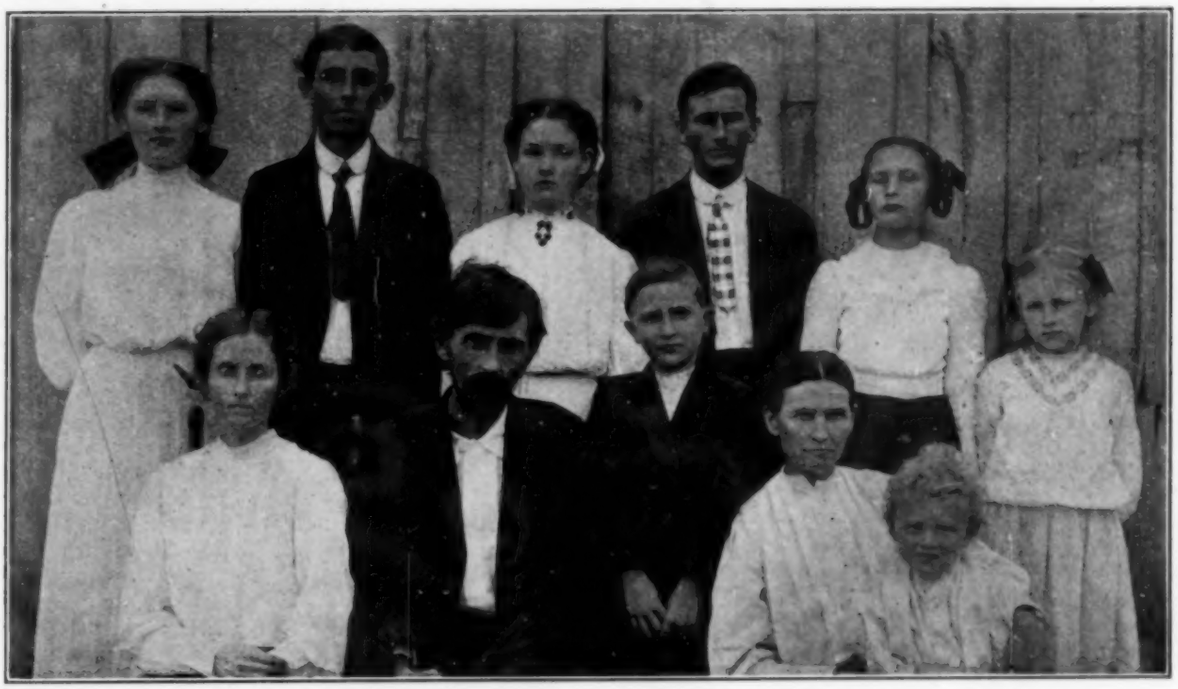

Fig. 6.—Tennessee family, all infected. All were cured with thymol. They had spent $1,500 for patent medicines.

HOW HOOKWORM DISEASE IS CURED

Hookworm disease is usually treated with Epsom salts, and with powdered thymol given in capsules. The object of the Epsom salts is to free the intestine from mucus or other substances surrounding the hookworms and protecting them from the action of the thymol. The patient should take little or no supper on the evening before the thymol is to be administered. As early at night as is convenient he should take a dose of Epsom salt. The next morning as early as the salt has acted, half the number of capsules of thymol prescribed for the whole treatment should be taken. Two hours later the remaining capsules should be taken. Two hours after the second dose of thymol, another dose of Epsom salt should be taken, which will expel the hookworms that have been forced to loosen their hold on the intestinal wall by the action of the thymol, and will also get rid of the excess of thymol before it has had time to produce any harmful effects on the patient. Nothing should be eaten on the day the capsules are taken until the final dose of Epsom salt has acted well. A little water or strong coffee, *without* milk, should alone be allowed.

As alcohol and oils dissolve thymol, making it actively poisonous to the patient, the use of them in any form would be exceedingly dangerous. Gravy, butter, milk, all alcoholic drinks and patent medicines, which generally contain alcohol, should be forbidden on the evening before and on the day of the treatment. Moreover, as many hookworm patients have dilated stomachs which do not readily empty themselves and it is important that the thymol reach the small intestine at once, the patient should lie on the right side for at least half an hour after taking each dose of thymol.

DOSE OF THYMOL

Age, Years	Grains	Grams	6 a. m.	8 a. m.
1 to 5	7.5	.5	½ dose	½ dose
5 to 10	15.	1.	½ dose	½ dose
10 to 15	30.	2.	½ dose	½ dose
15 to 20	45.	3.	½ dose	½ dose
20 to 60	60.	4.	½ dose	½ dose
60 and upward	45.	3.	½ dose	½ dose

The dose of thymol varies with the age of the patient. As the disease retards development and per-

sons 18 years old often have only the normal growth of 13, apparent and not actual age determines the dose. A competent physician, of course, should supervise the treatment. The accepted scale of doses is shown by the accompanying table.

The thymol is powdered and given in capsules. If sugar of milk is added grain for grain, the thymol operates better.

In a majority of cases two treatments like the one just described will expel all the worms. In 1,518 out of 3,630 patients treated in Porto Rico, a single treatment effected a cure; a second treatment was sufficient in 1,166 cases; 518 required a third; 247 a fourth; 104 a fifth; 47 a sixth, and so on until the last case was freed from hookworms by the eleventh treatment. Frequently the worms not killed by the thymol are sickened to a degree that they do not deposit any eggs for approximately two weeks. By a microscopic examination, made two weeks or longer after the last treatment, it is possible to know when all of the worms are destroyed, and the treatment completed. When a microscopic examination is not possible, the feces expelled by each treatment can be examined for hookworms in the manner already described. When no more worms are seen, one extra treatment for good measure should be given.

INDUCED PNEUMOTHORAX *

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The rational basis of induced pneumothorax as a treatment for certain pulmonary diseases is the fact that clinicians have noted for many years that consumptives are often relieved and sometimes cured by the spontaneous occurrence of hydrothorax or pneumothorax. Such observations have been recorded to a considerable number, both by old and by modern observers, including Bach, Goodhart, Hall, Jochman, Pepper, Webber, West, Osler, Hamman and Sloan. The presence of even pus in the pleura — empyema — is no longer considered *per se* an indication for surgical interference. Indeed, Murphy and other surgeons counsel delay in such cases until the underlying disease of the lung has had an opportunity to profit by the rest incident to its collapse. I myself have noted the excellent results that follow delayed operation in empyema complicating tuberculosis of the lungs. In the treatment of joint tuberculosis nothing is regarded as more essential than rest; indeed, in many cases fixation alone is sufficient to procure healing. The value of rest is not a whit less important in pulmonary tuberculosis. Once this principle has been grasped, the treatment of pulmonary tuberculosis by securing organ rest through mechanical measures appears quite rational. It remains only to determine by which mechanical means this object shall be obtained.

Various mechanical methods have been devised. Several styles of roller bandages, usually designed to compress one-half of the thorax by using the opposite shoulder for counterpressure, have been offered, but have never gained wide acceptance. Adhesive straps have also been employed and are to-day the accepted method of fixation of the chest wall in fractures of the ribs and in acute pleurisy. Plaster casts, cumbersome as they are, have been fashioned, and even a curious spring clip similar in conception to the ordinary paper clip, has been tentatively offered by an Englishman, to restrict movement of half the thorax. These methods are all open to both theoretical and practical objections, and therefore have gained but little recognition. Such tinkering devices were soon cast aside as inadequate in the presence of so serious a disease as consumption, and attention was concentrated on massive surgical operations. Suffice it here to say that they are not generally resorted to as efficient cures for pulmonary tuberculosis. Their object has been either the removal of diseased tissue, a task surrounded by unusual difficulties, or fixation of the lung.

More recently attention has been directed to fixation of the lung by another method — the introduction of gases or fluids into the pleural space. On account of the well-known physical law that gases exert their pressure in all directions equally, gases have been employed almost to the exclusion of fluids.

HISTORY OF THE PROCEDURE

The first record of such a procedure is attributed to James Carson, an English physiologist, who in 1821, while experimenting on lung elasticity, inflated the pleural sac of animals and foretold the value of induced pneumothorax in the treatment of pulmonary diseases, especially tuberculosis, but did not apply it clinically. In 1882, Forlanini of Pavia, Italy, reported a number of spontaneous cures by intercurrent pneumothorax, and advised that pneumothorax be induced artificially. In 1887, Adams reported a case of hemoptysis controlled by spontaneous pneumothorax, and advised its artificial induction. In 1892, Forlanini actually began to employ artificial pneumothorax; he made his first report in 1894. By 1895 he was able to offer a cure of well-advanced pulmonary tuberculosis by this method. Meanwhile, and without knowledge of Forlanini's work, Murphy of Chicago devised and applied the same treatment in five cases, in all of which he reported improvement in 1898. In the same year Schell reported a case of hemoptysis controlled by induced pneumothorax. Murphy, being a surgeon, and not desiring to be led into the field of internal medicine, turned his work over to Lempke, who reported fifty-three cases in 1889. About seven years ago Brauer made his first report, and since then has added much to the literature.

Since the publications referred to above, a number of tuberculosis workers on the Continent, in England, and more recently in America, have adopted the procedure. The principal credit of demonstrating the value of induced pneumothorax belongs to Murphy and Forlanini, although Brauer's work did more to popularize the method.

APPARATUS

While various forms of apparatus have been devised for introducing gas into the pleura, the simplest, and I think the best, are modeled after Murphy's original form. I shall therefore present such an apparatus, which is the form I have constantly used. Figure 1 represents two graduated bottles *W* and *N*, connected by tubing so that water flows from the upper to the lower, displacing gas from the latter, and forcing it through the tubing and needle into the pleural sac. The accessories are a cotton filter, *F*, for the gas, and

* Read before the meeting of the California State Medical Association, April 15, 1914.

a manometer, *M*, for recording intrathoracic pressures. A three-way stopcock, *C*, permits one to connect the patient at will with the manometer or with the gas container, *N*. In the tube leading from *C* to the manometer, is inserted the capillary device, or link, for controlling oscillations.

GAS

Various gases have been tested out. Unverricht found experimentally that when air is injected into a dog, the oxygen content is absorbed first, then the carbon dioxid and last the nitrogen. Not only is nitrogen slowly absorbed, but it is also inert and non-irritating, and therefore well suited to pneumothorax. My work has all been done with nitrogen, sterilized by being passed through red-hot tubes, washed and warmed immediately before use by being placed in a container which has been filled with hot mercuric chlorid solution, and filtered through cotton just before passing through the needle.

NEEDLES

In many cases some difficulty is met in getting the eye of the needle into the pleural sac, which before inflation is of course not a cavity, because the two pleurae cling together both by virtue of the vacuum in the sac, and by capillary attraction. The adhesion is such that even when the parietal pleura is cut, the lung does not immediately collapse. The layers still cling together even in the presence of atmospheric pressure. It is readily understood, therefore, that a dull instrument is more serviceable for finding the sac, as it is more likely to push the visceral pleura before it than to penetrate into the lung.

Manual dexterity and experience are here of great value. The experienced hand judges by the feeling what tissue the needle is penetrating. An educated tactile sense distinguishes with considerable certainty the feeling due to passage through the fascia, the resistance of the pleura and the feeling when the needle is embedded in the lung.

After the sac has once been inflated, subsequent punctures are easily made with a sharp needle, provided the gas has not been absorbed. It is injection of the empty sac that is difficult. A form of dull needle that has been serviceable in my hands is the Bauer needle modified by Floyd (*B*, Fig. 1). It has the advantages of an attached obturator for clearing the lumen, and a separate branch for the tube leading to the controller. Although the dull needle has its advantages, experience makes it easy to find the sac with a sharp needle. In my inflations, numbering over 614, I have used a sharp needle far oftener, even for first inflations.

MANOMETER

The heart of the apparatus is the manometer. When properly observed and followed, the readings of this instrument render the operation safe from accident. It serves two main purposes: when the needle has been introduced properly so that its lumen lies in the sac, the manometer announces the fact by free oscillations and a sustained negative pressure. To proceed without this information is to invite disaster. The second purpose served by the manometer is to indicate intrathoracic pressures, thus serving as the indicator and guide during the operation.

The manometer (*M*, Fig. 1) consists simply of a glass U-tube graduated in centimeters and filled with a fluid, usually water. Thoracic pressures are transmitted through the tube *X* (Fig. 1), and depress or suck up the fluid according to whether the pressure is positive or negative. Inasmuch as the patient continues to breathe, the pressure varies constantly, and therefore the columns of fluid are in constant oscillation. Inasmuch as not all operators are reading the manometer the same way, it may not be amiss to refer to this point.[1] Physics made clear long ago that pressure is measured by the column of fluid supported. Now the column supported is that portion of the longer column above the shorter. But as the columns are oscillating, one may record the maximum length of the column or its minimum length. But what is better than either,

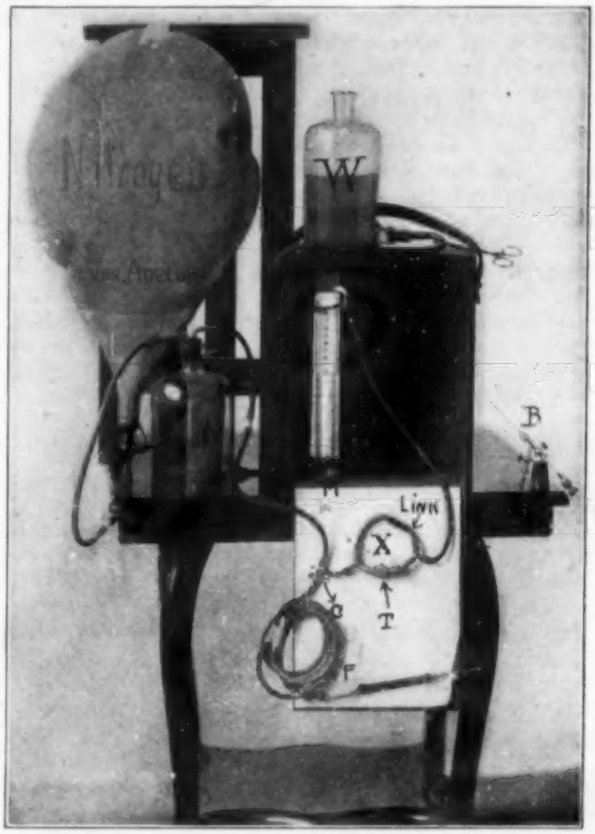

Fig. 1.—Portable apparatus; *W*, water-bottle; *N*, nitrogen bottle; *M*, Manometer; *c*, three-way stop-cock; *F*, filter; *B*, Floyd needle; *X*, tube leading from *c* to *M*, divided into two portions, on one of which is inserted the "link," the other branch furnished with a pinch-cock, *T*. The whole apparatus except the bag of gas is carried in the small box.

because it varies less, is the mean pressure. To secure uniformity and simplicity, it is here suggested that mean pressures be the figures recorded.

Fortunately, by employing a simple attachment,[2] shown in Figure 2, mean pressures can be read directly, that is, free from oscillations. Thus a positive-reading manometer for mean pressures is readily available. The attachment consists of a capillary tube fixed in a larger tube (for protection) or any similar device that forces registration through a minute opening, *C*. This device is placed in one limb of the divided tube leading to the manometer (Fig. 1). When the rubber tube, *T*, is pinched off, forcing all pressures to reach the

1. Von Adelung, Edward: Interstate Med. Jour., 1913, xx, No. 11.
2. Von Adelung, Edward: The Pneumothorax Manometer, THE JOURNAL A. M. A., Sept. 6, 1913, p. 771.

manometer through the link, mean pressures will be recorded with no oscillations. But, as all workers know, the oscillations are necessary for several purposes, and are indispensable to prove the position of the needle — to show when it is in the pleural sac. If the tube, *T*, is left open, oscillations occur as usual. Thus both uses of the manometer are readily available.

The advantages of this link are (1) ease of reading; (2) uniformity of records; (3) protection of manometer against overflow when patients cough, and (4) greater accuracy, inasmuch as the mean pressure varies less than either maximum or minimum, namely, than either the expiratory or inspiratory pressures.

Fig. 2. — Capillary opening in small tube sealed into larger tube.

When the language of the manometer has been mastered the following information is available from its readings:[3]

1. When the needle is in the pleural space, a negative mean pressure with free oscillations is recorded.

2. When the needle is in the air-space of the lung, free oscillations occur that are equally above and below the zero point.

3. It indicates the size of the pleural space; a free pleura requires many hundred cubic centimeters of gas before the pressure becomes positive. If a few hundred cubic centimeters of gas produce a positive pressure, it indicates a small pleural space.

4. If the needle is embedded in adhesions or if it is extrapleural, no oscillations will occur.

5. The readings indicate the absorptive power of the pleura by the amount of gas that must be injected to regain the terminal pressure of the previous inflation.

6. It indicates the degree of elasticity of the compressed lung: during subsequent filling, if the pressure rises very gradually on introducing 100 c.c. at a time it indicates that the lung had expanded with the diminished pleural pressure. Had the lung remained collapsed, there would have been but slight rise of pressure until after considerable gas had been refilled.

7. A slow increase in pressure with wide oscillations indicates an elastic mediastinum, while the reverse indicates a rigid mediastinum.

8. Rarely, the rupture of adhesions during inflation is indicated by sudden fall of pressure, or still more rarely, rupture of the lung or of the mediastinum.

9. Occasionally, reversed oscillations occur—that is, a higher pressure with inspiration than with expiration. This is due to paradoxical diaphragm movements.

10. If, when the patient takes a deep breath or coughs, the column is moved several degrees but fails to oscillate, it is an almost certain sign that the apparatus is obstructed — usually in the needle.

TECHNIC

As far as the operation is concerned, the main difficulty is the entry of the empty pleural sac, which is frequently obliterated by adhesive pleurisy. And even if it is patent and normal, it is a mere line between two serous layers in apposition. Two procedures are recognized: (1) the Brauer, or open method, which consists of exposing the parietal pleura by incision, and dissection, and the introduction of a catheter between the two pleurae, under guidance of the operator's eye, and (2) the Forlanini method, or blind operation, which consists simply of passing a hollow needle through the chest wall into the pleural sac, the operator being guided by the sense of touch and the manometer.

American operators prefer the Forlanini method. I have not used the Brauer incision, though I have no doubt that it might succeed when the puncture method fails. The objections to it are that it consumes time and requires incision, dissection, suturing, careful asepsis and dressings. Furthermore, it is more likely than is the blind method to be followed by subcutaneous emphysema. Finally, more patients object to cutting than to the needle.

In contrast, Forlanini's puncture is simple, safe in careful hands and successful in nearly an equal number of cases. If an adherent pleura is encountered, subsequent attempts in new sites means simply painless needle-punctures instead of incision operations. No dressing is needed after the puncture, and less fear is engendered than by the knife.

AUTHOR'S TECHNIC

Information gained from roentgenoscopy, from physical signs and from the patient's statement which side was first affected, guides me in selecting the worse side for operation. The patient usually lies down. The exact site is chosen by finding a place that is resonant, yields breath-sounds and is away from important organs. It is impossible, however, to foretell the presence of adhesions. The chosen spot is sterilized with tincture of iodin, and then a few drops of novocain in epinephrin are slowly injected, first intracutaneously, then subcutaneously, intramuscularly and finally into the pleura. If the dull needle is to be used, the skin is first punctured with a sharp instrument. If the pleura already contains gas, a sharp, short aspirating needle, with obturator, is pushed directly into the pleural sac. If, however, it is a first injection, I use either a Floyd needle, or preferably the sharp needle, pushing it very slowly through the skin, muscles, fascia and finally through the parietal pleura, judging of its location largely by tactile sense, but always depending on the manometer. When the manometer records a negative mean pressure with free

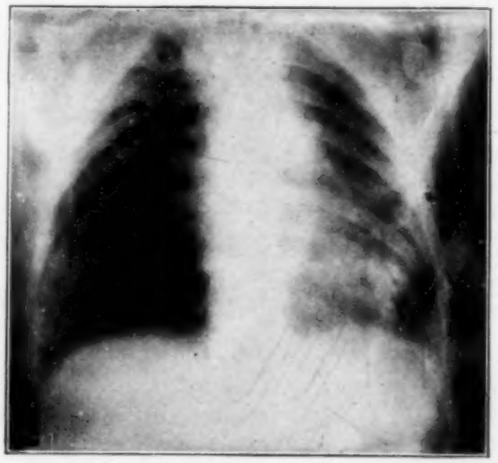
Fig. 3.—Case 553, W. Before treatment.

3. Adapted from Hamman and Sloan: Johns Hopkins Hosp. Bull., 1913, xxiv, No. 264.

oscillations I know that the needle is properly placed. After noting the initial mean pressure, I inject gas slowly to a variable amount, usually not more than 200 or 300 c.c.

The terminal mean pressure is then recorded and the needle withdrawn. Should it happen that too much gas is introduced, the removal of the surplus is a very

Fig. 4.—Case 517, W. Adhesions allow only small pneumothorax, yet good results followed.

simple matter, requiring only that one reverse the position of the bottles (*W* and *N*, Fig. 1). No dressing is applied. As soon as the needle has been properly placed, the manometer becomes the guide and is consulted frequently during the introduction of the gas. Injections are repeated as frequently as needed, depending on the rapidity of absorption, every two or three days up to once a month, the object being to maintain collapse of the lung. At first the intrapleural negative pressure, usually from 2 to 10 cm. water, is reduced to 3 or 5 cm. negative mean pressure. Only after several treatments is a neutral or a positive pressure produced, thus allowing time for thoracic organs to accommodate themselves to the new pressure and to their inevitable displacement, and to allow the other lung to prepare to compensate.

When a positive mean pressure has been attained, I take the second roentgenogram as a record, to indicate the size and shape of the pneumothorax. Other roentgenograms are taken when needed for information. The lung is kept collapsed for many months — a year, or even longer in some cases. Brauer fixes the period at from one to two years, but says that he has seen good results in six months. Improvement, however, not infrequently sets in shortly after the beginning of treatment. When the treatment is discontinued, the lung usually expands and functionates again as well as the fibrosis of the healed parts can be expected to allow.

In some bilateral cases, after compressing one side for several months, I have allowed the lung to reexpand, and have then treated the opposite lung in the same way. Recently, in a few desperate cases of bilateral infection, I have done a partial inflation of the two sides *simultaneously*, the result thus far being apparently beneficial.

PATHOLOGY

The pathologic changes found after continued compression of the lung indicate the value of the procedure. According to Forlanini, Saugman, Graetz, Warnecke and Kistler, the most striking changes resulting from compression are the following: There is marked fibrous formation and no evidence of advancing disease; old caseous areas are surrounded by dense fibrous tissue; the alveolar epithelium is transformed into the cuboidal or columnar type; the lymphatics are dilated and richly pigmented, a condition indicating marked stasis in the lymphatics; the circulation of blood is likewise altered. In spite of long-standing atelectasis, the alveolar walls, though pressed together, do not adhere. That the process in the other lung may also be arrested, although doing the work of two, is vouched for by nearly all observers — Hamman and Floyd, Brauer, Spengler, Forlanini and many others.

The immediate results of pneumothorax are often unfavorable: the cough increases, the sputum augments, the toxemia increases as evidenced by rise in temperature and pulse, dyspnea grows worse, and the patient loses in weight and appetite. After a few weeks, however, the benefits become apparent. The collapse of the lung has secured physiologic rest, and the walls of cavities are approximated, thus aiding their healing and abolishing hemorrhages. The lung contents — air, pus, secretions and detritus, with their rich bacterial flora — are mechanically expelled, reducing or abolishing cough and sputum; the lymphatics and blood-vessels are compressed, inhibiting the spread of the infective germs and of their toxins, often rendering the sputum clear of tubercle bacilli and elastic fibers, reducing or abolishing fever and sweats, and permitting the appetite to return, the weight to increase, the pulse to drop to normal, cyanosis to disappear and the opsonic index to rise. The opposite lung enlarges to compensate for the defunctionated lung area, and in favorable cases general clinical improvement follows, as expressed by a sense of well-being, and increased weight, strength and energy.

Fig. 5.—Case 523, Ch. Incomplete left pneumothorax; large cavity; diaphragm adhesion; fibrosed upper lung; result excellent.

ACCIDENTS

I have now to refer to some accidents that may befall in artificial pneumothorax, and to indicate how they are to be avoided. Pain from the needle can be entirely avoided by careful local anesthesia as previously described; but pain occurring during or after an injection, probably because of tension on pleuritic

adhesions or to displacement of organs, is often unavoidable. It is rarely of long duration, and is best minimized by gradual attainment of the desired pressure.

Subcutaneous emphysema results from inducing considerable positive pressure, or from coughing, straining, etc., and is due to leakage from the pleura back through the puncture into the tissues. It is more common after the Brauer incision than after the Forlanini puncture, but will ensue after either if much positive pressure is induced. Strapping a hard pad over the puncture will often prevent the return of gas. Digital pressure continued for from ten to thirty minutes is entirely successful. A spring pad like a hernia truss is useful. When subcutaneous emphysema invades the neck and face, it becomes distressing, but is never a danger.

Bleeding from the opposite lung, in bilateral cases, due probably to compensatory stretching of the lung, is usually regarded as a rare accident. It occurred in two of my cases.

Puncture of the lung is to be avoided, though it commonly causes no difficulty. It is easily conceivable

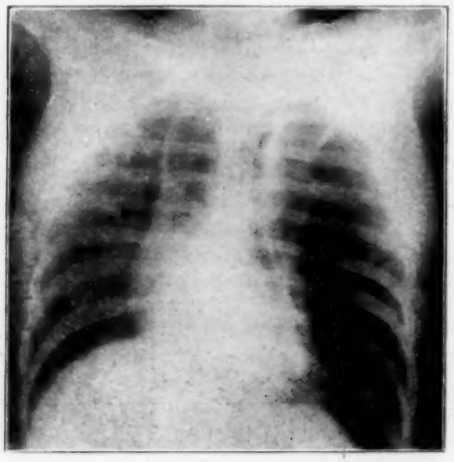

Fig. 6.—Case 508, O. Almost complete left pneumothorax; adhesions at apex, diaphragm and third rib; result excellent.

that the pleura might be infected by wounding the diseased lung, but most observers do not find that serious results follow this accident. Hamman and Sloan state that "simple puncture of the lung with an aspirating needle, even when the lung is diseased, is associated with little danger." My experience leads me to believe that lung wounds from punctures are rarely followed by more than temporary pleuritic pain, or by bloody sputum.

But the pleura can doubtless be infected by an unclean needle or other surgical septic error. No operator can afford to neglect strict asepsis in this operation, especially as it is stated that 50 per cent. of pneumothorax cases develop pleuritic effusion. I think this figure may be too high. In a series of forty-two cases with 614 punctures, I encountered a pleuritic effusion consequent to pneumothorax only six times. Effusions are nearly always reabsorbed after a time, and are not a hindrance to lung healing.

Displacement of the heart and aorta and mediastinum naturally occurs to some degree with inflation of one pleural sac. In most cases no distress results, but untoward symptoms have been attributed to this anatomic cause. Distress from this cause is to be avoided by inducing the complete compression gradually, so as to allow the organs time to adjust themselves to new conditions, and also by avoiding high pressures. In my experience a positive mean pressure of over 5 c.c. is likely to cause some disturbance in bilateral cases. Higher pressures are liable to cause subcutaneous emphysema and distress.

Dyspnea is liable to appear in all cases after the early inflations; it is not usually serious, and is always slight with low pressures. It is rapidly relieved by absorption of gas, and later by compensatory functioning of the opposite lung, or by adjustment of the circulatory organs. It is noteworthy that dyspnea need not follow an inflation until an hour or more later. Its appearance is frequently delayed and often manifest only during exertion. In certain unsuitable cases, or when high pressures are used, dyspnea may become an important complication. The interesting question of the least lung capacity compatible with life has been investigated by Le Play and Mantoux, who report that whereas Courmont destroyed, surgically, three quarters of the lungs of animals without death, they were able, by induced pneumothorax, to render atelectatic all but one-sixth of the lungs of a dog without killing him. The physiologic adjustment of the lungs is possible therefore within wide limits.

PLEURAL REFLEX AND GAS EMBOLISM

There now remain to be discussed two accidents, the most important of all; pleural reflex and gas embolism. All authorities mention these as the most dangerous of the accidents. Fortunately, only a few deaths have been reported. Forlanini reported 1,454 inflations with four pleural reflexes, only one of which was serious. In another series of 500 inflations there were three fatalities. Saugman reported 970 with no pleural reflexes; this he attributed to avoidance of high pressures. The distinction between the two accidents is not clear. Some authors hold that pleural reflex is nothing but air embolism. The usual post-mortem examination fails to show air in the blood-vessels, even when it is known to have entered. So Brauer resorted to an examination of the brain under water, by which expedient he demonstrated bubbles in the blood-vessels. Clinically, pleural reflex and gas embolism yield the same syndrome: fainting, pallor, convulsions and perhaps temporary or permanent paralysis (usually hemiplegia) and occasionally death. Indeed, while Forlanini regards "pleural reflex" or "pleural shock" or "pleural eclampsia" as a distinct entity, and though animal experimentation is said to confirm the possibility of such a reflex syndrome, still Sampson and Brauer attribute the syndrome to air embolism in all cases, and declare that it is entirely avoided by the open method of operating. Saugman states that gas embolism does not occur unless the amount of gas introduced into the blood exceeds 20 or 30 c.c. In over 614 injections, I have not yet had such an accident, though I have seen the syndrome in a dog. There are four principal ways to avoid this serious accident:

1. A preliminary hypodermic injection of morphin is recommended as a preventive, but is objectionable for obvious reasons.

2. The Brauer incision, which enables the operator to see where the instrument delivers the gas, is urged as a preventive.

3. Saugman and some others aspirate before turning on the gas to see whether or not the needle is in a blood-vessel.

4. It has also been recommended that one first inject saline solution or oxygen until satisfied that the needle is not in a blood-vessel. My conviction is that air embolism and real pleural reflex, such as results experimentally from the injection of irritating fluids into the sac, are both to be avoided by using warm, moist nitrogen, careful local anesthesia of the pleura and proper observation of the manometer. Not until the latter records free oscillations with persistent negative mean pressure can one feel sure that gas may be introduced safely, unless one is using the open method.

INDICATIONS AND CONTRA-INDICATIONS

If one seeks a consensus of opinion on the cases which are appropriate for induced pneumothorax, he will soon see that a great difference of opinion prevails. Practically all observers agree that we have in pneumothorax an excellent means of controlling hemoptysis. In the few cases of hemoptysis that I have treated by this method, the result has been immediate success.

The presence of fever, even high, is not a contra-indication for induced pneumothorax. On the contrary, the temperature frequently drops under this treatment with surprising promptness.

The presence of fluid in the sac must be regarded as Nature's effort tending toward the same end as pneumothorax, namely, to secure lung rest, and is therefore to be removed only when symptoms demand intervention. On the other hand, a small effusion may be augmented by adding gas, thus inducing more complete lung rest.

Pleuritic adhesions, if extensive, constitute a mechanical barrier of a serious kind. Extensive adhesions prevent lung collapse and render pneumothorax impossible. If only partial, they may sometimes be broken down by gas pressure, carefully applied, or perhaps sufficient free pleura may exist to allow of a therapeutic result.

All writers agree that laryngeal tuberculosis is not a bar to the treatment. The larynx usually improves as the lung improves, but tuberculous infection of the bowels is a grave complication. Nevertheless, some report improvement even in these cases.

If the patient is already dyspneic, pneumothorax is *a priori* irrational, unless the dyspnea is attributable to the toxin and not to the limited lung area. Generally, such cases are unfavorable.

Miliary tuberculosis is regarded as a contra-indication, and so are serious cardiac disorders and marked splanchnoptosis.

The main discussion has centered on the question of how early in the course of pulmonary tuberculosis the patient should begin this treatment. While at present most writers agree that the best results are to be expected in unilateral cases, still they are not willing to restrict its application to this class of cases, nor are they willing to recommend its use in the early stages. It is therefore reserved for moderately advanced unilateral cases, and for some bilateral cases. Still I note that there is a growing tendency to extend the treatment to earlier cases, and to grant what alleviation it may offer even to those in the last stages. Some surprising results have been recorded in this class, usually considered as hopeless; but before expressing myself on these points let me quote a few authors on the indications and contra-indications.

Forlanini regards as favorable the uncomplicated unilateral cases free from pleural adhesions (unless these can be cleared by gas pressure) running a slow or subacute course, and provided the lesions are not far advanced. Claude Lillington admits cases of extensive and acute disease if unilateral, or nearly so; but he also finds that some cases with extensive bilateral disease are benefited. Klemperer says to try medical treatment first, but not to wait too long. He confirms the indication in unilateral cases, and thinks that the best results are in moderately severe cases, but in a comparatively early stage. Still he advocates the procedure in all cases with continuous fever and much expectoration, when the condition is not too desperate. Herbert Rhodes recognizes its value in recurrent hemoptysis, in unilateral cases and in some bilateral cases. Volhard endorses the suitability of unilateral cases even though involving the whole lung. He also endorses the treatment in bronchiectasis, but finds abscess and miliary disease contra-indications. Robinson and Floyd say: "Certainly the unilateral cases are the best adapted and promise the best results: but many of the good results reported by Brauer and Spengler in their series of 102 cases have occurred in bilateral cases. None of our own group were strictly of unilateral involvement, and yet the progress of six cases is most promising." Shortle reports much improvement in fourteen out of twenty-two cases, although all the patients were advanced in disease.

From the evidence thus far adduced, it seems to me that authorities disagree widely. If one decides to require prolonged medical treatment in early cases before resorting to pneumothorax — if the early cases are to be refused — then it seems to me that the treatment will be restricted almost entirely to progressed bilateral cases. For I have yet to see my first case of extensive unilateral disease without demonstrable infection of the opposite side. I believe that in the selection of cases, their classification into early or moderate or advanced is not of so much importance as is *individualization*. Some cases in each class are suitable for pneumothorax, and some in each class should be refused. To my mind, experience has already demonstrated this. On the other hand, if the theoretical explanation of the *modus curandi* of pneumothorax is correct (and I believe that it is correct), and if in this procedure we are following in Nature's own footsteps, securing physiologic rest in a disease in which the value of rest is amply demonstrated, and if we are squeezing infective material from the lung, encouraging fibrosis, discouraging hemorrhage, lessening toxemia and ridding the sputum of tubercle bacilli (all of which seems to be proved), then one queries why this treatment is not applicable to the early cases. The only reply is that a large proportion of early cases are curable by other means. But it seems to me that when we find ourselves face to face with a disease as serious as pulmonary tuberculosis, even though in an early stage, we should consider well before refusing pneumothorax, a treatment that has arisen from observation of Nature's cures, a treatment based on a rational theory, a treatment that offers a resultant lung pathology that proves its value, and a treatment that has yielded 22 per cent. clinical cures when limited to advanced cases.

After having come to this conclusion I was much interested to read what Murphy, the American discoverer of induced pneumothorax, wrote. He stated that it was especially applicable to "apical or monolobar tuberculosis in the early stage, as the pathologic conditions are such that the compression of the lung can be accomplished and adhesions are not likely to be found. I do not consider," he continues, "that it is indicated or practical in advanced or chronic tuberculosis, as the fibrous tissue deposited in the lung will not permit compression of the lung, nor will the pleuritic adhesions allow of gas introduction." In a more recent article Murphy has reiterated these early views.

As a matter of fact, practically only well-progressed cases have been treated by this method, although they offer the least promise. All my cases were advanced in disease. Before stating my results I will quote a few reports of other workers in this field:

Walker and Soltau reported 13 cases, in all of which there was improvement. Zubini reported favorable results in a series of 43 cases. Murphy reported 5 cases, all improved. Many of Lempke's patients were greatly improved and some cured. Robinson and Floyd reported 25 cases all improved. Lapham reported 31 cases, 68 per cent. arrested, 2 cured. Brauer reported 102 cases, 22 per cent. cured.

Murphy stated recently that from a study of 500 collected cases with 2,500 injections, he concludes that artificial pneumothorax should always be made in every case of pulmonary tuberculosis in which there is no absolute contra-indication. I have no hesitancy in concluding that when properly performed, with careful technic, by one who is experienced, the procedure is quite safe and practically painless. When not curative it is very often alleviative, affording an otherwise hopeless case a new chance for arresting the disease.

My experience is limited to forty-two cases, all but one bilateral and well advanced. All but one were ambulant, the patients coming to the office for treatments.

Of the forty-two cases, it is noteworthy that pleuritic adhesions prohibited pneumothorax in only five.

The total number of punctures done was over 614, and no gas embolism occurred; but pleuritic effusion supervened in six cases, one being purulent.

Twenty-two patients gained weight and eleven lost weight, this observation being unrecorded in four cases.

In the thirty-seven cases in which a pneumothorax, even though small, was possible, twenty-eight patients were improved in varying degrees, one was arrested (perhaps cured) and ten remain unimproved.

Oakland Bank of Savings Building.

Wages and Hygienic Living.—Regular employment at wages sufficient to meet the cost of hygienic living is the sine qua non of all the requirements. It does not take an expert in disease prevention to tell us that an underfed, poorly clothed, poorly housed group of people are going to prove easy prey to the germs of influenza, pneumonia, tuberculosis and similar diseases. Neither does it take a deep and prolonged study of wages, cost of living and housing conditions of the working people of the United States for us to know that a large percentage of them are living on a scale greatly below a hygienic minimum.—B. S. Warren in *Pub. Health Rep.*

THE GERMICIDAL ACTIVITY OF CALOMEL*

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While conducting investigations concerning the germicidal activity of chrysarobin and other substances used in the treatment of psoriasis, we were required to devise a technic suitable for testing substances which are insoluble in water. All of the methods generally employed in testing germicides require that the substance be soluble in water, weak alcohol, weak alkaline solutions, etc., which in themselves have little or no germicidal activity.

Since calomel is practically insoluble in water we have selected it as a control and have determined its germicidal activity on ordinary test micro-organisms.

After considerable experimentation, we have during the past year worked out a technic for determining the germicidal activity of insoluble substances which is very simple and yields surprisingly uniform results. It is not so perfect as the Rideal-Walker or Hygienic Laboratory methods for testing soluble substances, and it does not attempt to distinguish between antiseptic action and germicidal power; but for insoluble substances it has yielded us fairly good results.

Early in the work we were surprised to find that calomel had a germicidal activity equal to that of mercuric chlorid, and further studies have shown that several other insoluble salts of mercury have similar germicidal values.

In this note we wish to present the results of these studies with various mercurial salts, together with a brief description of the technic, a fuller account being given in another paper.

TECHNIC

A difficulty in working with substances insoluble in water is the preparation of a suspension such as will remain uniform for at least an hour or until all manipulations have been finished. We have found a sterilized 2 per cent. solution of acacia in water to answer this purpose most satisfactorily; the substance to be tested is accurately weighed and placed in a sterile flask containing a layer of small glass beads, the required amount of acacia solution being added and a suspension secured by agitating or shaking the flask for several minutes. All measurements of the suspension are made with sterile graduated 1-c.c. pipets. When working with calomel we have found that very little adheres to the sides of the pipet; but with chrysarobin and similar powders, it may be necessary to wash out the pipet once or twice with either sterile bouillon or normal saline solution.

During the time necessary for measuring varying quantities of the suspension, the flask should be occasionally shaken in order to keep the contents uniformly suspended.

We have used various test micro-organisms; since the primary object of our work was concerned with chrysarobin and its action on the skin, we have usually worked with cultures of staphylococci; however, a culture either of *Staphylococcus aureus* or *Bacillus*

* From the Pathological Laboratory of the Dermatological Research Department, Philadelphia Polyclinic and College for Graduates in Medicine.

typhosus may be used. The test micro-organism is cultivated in neutral bouillon for twenty-four hours at 37 C. (98.6 F.), filtered to remove clumps, and used in a constant dose of 0.1 c.c. as delivered by an accurately graduated 1 c.c. pipet.

Both plain neutral bouillon or plain neutral agar may be used for the seed medium. Best and most uniform results were secured with the former. Each tube contains exactly 10 c.c. of the medium.

The technic is very simple. In the *plate method*, increasing amounts of the suspension as, 0.05, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9 and 1 c.c. are pipetted into a series of twelve sterile Petri dishes; 0.1 c.c. of a twenty-four-hour bouillon culture of the test organism is added, followed by 10 c.c. of melted agar cooled to 40 c.c. The whole is thoroughly mixed. The twelfth plate receives culture and agar and serves as the culture control.

At the end of twenty-four hours the plates are inspected. The control usually shows so many colonies that it is impossible or inaccurate to count them. When germicidal activity is manifest there occurs a numerical decrease in colonies easily determined by counting.

By use of a 4-mm. loopful of bouillon culture in each plate the number of colonies is much reduced and accurate counting facilitated, especially in those plates which show germicidal activity of the substance being tested.

When working with large doses of a light powder it is impossible to determine by mere inspection of the plate whether or not germicidal action is manifest. In such instances, or when in doubt, we have cut out a block of agar with a stout platinum loop from the center of each dish and macerated this on a slant of neutral agar; the final result of the test is therefore delayed another twenty-four hours.

Better, sharper and more definite results are secured when the tests are conducted with a fluid medium. To a series of twelve tubes, each containing 10 c.c. of plain neutral bouillon, increasing amounts of the suspension of substance as given above are added; after each addition the pipet may be washed out once or twice by drawing up and expelling bouillon; to each tube there is added 0.1 c.c. of the test culture; the twelfth tube is the culture control and should never be omitted. The tubes are incubated for twenty-four hours, when the results are read. One is surprised with the regularity and sharpness of the results; even with slight differences in the dose of germicidal substances the tubes either do or do not show uniform clouding due to bacterial growth.

Of course in either method the culture controls must show good growths, as they usually do when working with *B. typhosus* or *Staphylococcus aureus*.

In this method the final dilutions vary when increasing doses of suspension are added to constant amounts of bouillon. We placed the desired amounts of suspension in a series of twelve dry sterilized tubes and pipetted in increasing amounts of sterile bouillon to make the total volume in each tube the same and equal to 10 c.c., but the results were practically the same when tried out parallel with the simpler procedure described above.

With the bouillon-tube method the results with the same substance from day to day are remarkably constant.

We have adopted calomel as a standard and have been able to express the relative values of other substances in comparison.

In the Hygienic Laboratory method of testing germicides the test organism is exposed to the action of the germicide for varying intervals of time as 2½, 5, 7½, 10, 12½ and 15 minutes, after which a loopful of micro-organisms and germicidal solution are removed and planted in bouillon. One loopful is, therefore, so highly diluted in the seed bouillon that any question of continued germicidal activity can practically be ruled out, unless the solution is highly concentrated. In our method it is not a simple matter to remove the germicidal substance and separate the test micro-organism. We have done so by different filters, but the technic is not uniform or practical. The micro-organism is continuously exposed to the germicide and in this manner we are unable to differentiate between antiseptic and germicidal action, for a substance may inhibit the growth of a micro-organism without necessarily killing it. As we have shown in our complete paper, this question of length of exposure is quite important. For example, 0.005 gm. of sodium arsenate inhibits the growth of staphylococci according to our method, whereas this salt shows no inhibiting or germicidal action by the Hygienic Laboratory method even in concentrated solution (1:5) after the maximum exposure of 15 minutes.

Throughout the remainder of this communication we speak of the "germicidal" activity of various substances; with calomel we have demonstrated that this terminology is correct; with many other substances, however, we have not so far attempted to differentiate between their antiseptic and germicidal power.

CALOMEL

We were surprised to find that calomel has a germicidal activity equal to that of mercuric chlorid. Naturally our first thought was that the preparation we were using (Merck's) might have contained traces of mercuric chlorid responsible for this result. But chemical tests for mercuric chlorid in heavy suspensions of calomel before and after filtration through Berkefeld filters did not show the presence of this substance. Likewise it was considered possible that hot agar or some chemical in the culture-medium might have rendered the calomel soluble or have changed it to a soluble salt; but careful and repeated experiments have shown that this does not occur. Furthermore, after a calomel suspension has been shaken mechanically for an hour at 42 C. (107.6 F.) and is filtered through a Berkefeld filter, the filtrate does not possess germicidal activity.

TABLE 1.—GERMICIDAL POWER OF CALOMEL

Calomel Suspension c.c	Equivalent in Weight gm	24-Hour Bouillon Culture of Staph. Aur. c.c.	Sterile Bouillon c.c.	Results after 24 Hours at 37 C.
0.05	0.000005	0.1	10	+
0.1	0.00001	0.1	10	+
0.2	0.00002	0.1	10	+
0.3	0.00003	0.1	10	+
0.4	0.00004	0.1	10	+
0.5	0.00005	0.1	10	—
0.6	0.00006	0.1	10	—
0.7	0.00007	0.1	10	—
0.8	0.00008	0.1	10	—
0.9	0.00009	0.1	10	—
1.0	0.0001	0.1	10	—

Table 1, one of many similar experiments, shows the remarkable germicidal power of calomel on *Staphylococcus aureus*.

Ten mg. of calomel were suspended in 100 c.c. of acacia solution. Each cubic centimeter contains, therefore, 0.0001 gm., or 1/600 grain.

It will be observed that 0.05 mg. (0.00005 gm.) or 1/1200 of a grain of calomel is capable of sterilizing 0.1 c.c. of staphylococci in 10 c.c. of bouillon.

A similar effect was noted with cultures of *B. typhosus* and *B. coli;* 0.1 c.c. of anthrax culture required at least 0.004 grain of calomel to bring about their destruction.

We have no explanation to offer of the mechanism of so high a germicidal activity of a substance insoluble in water. On first thought it would be supposed that each particle of germicide must come in actual contact with each bacterium; but this explanation can hardly hold when 0.00005 gm. of calomel spread out in 10 c.c. of agar in a Petri dish or in bouillon completely inhibits or kills the cocci contained in 0.1 c.c. of a twenty-four-hour bouillon culture.

OTHER MERCURIAL SALTS

An application of the same method to a study of the germicidal activity of other salts of mercury such as ammoniated mercury, red and yellow oxids, red and yellow iodids, etc., has shown them to possess a germicidal activity equal to calomel and mercuric chlorid.

Table 2 is included to show the comparative values of these mercurials and other soluble and insoluble substances, as determined by us. The figures refer to the smallest amount of substance required to inhibit the growth of 0.1 c.c. *Staphylococcus aureus.*

TABLE 2.—GERMICIDAL DOSES OF VARIOUS SUBSTANCES*

Substance	Amount in Grams	
	Bouillon	Agar
Yellow iodid Hg	.00004	.00004
Calomel	.00005	.00005
Red iodid Hg	.00005	.00004
Red oxid Hg	.00005	.00004
Mercuric chlorid	.00005	.00004
Yellow oxid Hg	.00006	.00004
Salicylate Hg	.0005	.0005
Ammoniated Hg	.00006	.00004
Liquor formaldehydi	.0005‡	.0008‡
Pyrogallol	.002	.002
Potassium arsenite	.002	.002
Sodium arsenate	.005	.008
Arsenic iodid	.01	.01
Phenol (carbolic acid)	.013	.02
Boric acid	.04	.04
Gray powder	.05	.05
Thymol iodid	.05	.03
Iodoform	0†	0
Sulphur	0	0
Acetanilid	0	0
Zinc oxid	0	0
Chrysarobin	0	0

* One-tenth c.c. of twenty-four-hour-bouillon culture of *Staphylococcus aureus.*
† Not germicidal in maximum dose of 0.12 gm.
‡ Cubic centimeters.

It will be noted that most of the mercurial salts have a constant germicidal activity which is practically equal to that of mercuric chlorid. Taking calomel as a standard, the efficiency of other insoluble substances is readily expressed as the "calomel coefficient."

From a number of fragmentary reports given us by various clinicians who have at our suggestion used calomel suspensions in the treatment of various suppurations, we would suggest the use of calomel suspended in sterile acacia solution in the treatment of cystitis and pyelitis, and in suppuration of joints and sinuses. We would tentatively suggest a dosage of calomel of from 1/10 to 1 grain to the ounce in 2 per cent. acacia solution.

The one main difficulty in the therapeutic use of calomel suspension in acacia-water is the fact that sedimentation begins within from half an hour to an hour. If, however, the suspension is prepared in a bottle it may be readily shaken just before use and permits being injected into the bladder, accessory sinuses, etc.

CONCLUSIONS

1. The method herein proposed for testing the germicidal activity of substances insoluble in water is very simple and yields constant and reliable results; it offers a means of determining comparative values with calomel as a standard, the result being expressed as the "calomel coefficient."

2. Despite the insolubility and relative non-toxicity of calomel, its germicidal power, weight for weight, equals that of mercuric chlorid. Certain other mercurial salts are equally germicidal.

3. Suspensions of calomel offer considerable hope of various cavities.

1922 Spruce Street—927 South Bernard Street.

SPONTANEOUS RUPTURE OF THE HEALTHY ESOPHAGUS

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Because of the interest stimulated by the observation of a case and the apparent rarity of this condition, I have reviewed the literature on this subject.

Spontaneous rupture of the healthy esophagus should include those cases of rupture *per se,* and exclude those in which the rupture has been due to trauma either from within or without, and also cases of perforation, the result of chronic peptic ulcer diverticulum, tuberculosis, syphilis, cancer and aneurysm. In selecting cases one must also reject those in which there has possibly been post-mortem digestion of tissue and those cases of esophagomalacia. Failure to eliminate such may lead to erroneous conception of the disease. For this reason I have not included the cases reported by Colegrove,[1] Heyfelder,[2] Guersent,[3] Lomax,[4] Oppolzer,[5] Howse,[6] Boyd,[7] West and Andrews,[8] and Bailey.[9]

ETIOLOGY

The disease is most frequently seen in men who are addicted to alcohol. How much influence the latter has on the condition has never been determined. In practically every case rupture has followed vomiting or retching after an abnormally large meal. The point of rupture in every case has been just above the diaphragm. In this small section of about 5 inches there is a transition from the esophagus. Also, we learn from the experimental work of McKenzie[10] that this is the weakest section of the esophagus and, furthermore, it is weaker than the normal stomach; but why the esophagus at this point should be weaker in a few persons than in others is not demonstrated. Some maintain that there is always disease in such cases.

1. Colgrove: Buffalo Med. Jour., May, 1873, p. 1849.
2. Heyfelder: Tr. Path. Soc. London, 1837, xxxiii, 123.
3. Guersent: Bull. Fac. de Méd. de Paris, 1812, i, 73.
4. Lomax: New York Med. Rec., Jan. 6, 1906, p. 1.
5. Oppolzer: Wien. med. Wchnschr., 1851, i, 61.
6. Howse: Lancet, London, 1884, i, 113.
7. Boyd: Tr. Path. Soc., London, 1881-82, xxxiii, 125.
8. West and Andrews: Brit. Med. Jour., April 10, 1897.
9. Bailey: New York Med. Jour., May, 1873.
10. McKenzie: Diseases of the Nose and Throat, 1884, vol. xi.

RUPTURE OF ESOPHAGUS

No.	Sex	Age*	Alcohol†	Previous History	Onset	Symptoms	Emphysema	Duration of Life, Hours	Shape and Position	Results of Necropsy	Authority and Date
1	♂	50	?	Gouty; heavy eater, accustomed to emetics	Sudden, while vomiting	Felt something give way; intense pain; collapse; dyspnea	+	13	Complete transverse rent 3 fingers' breadth above diaph'gm	Collapse of the lung; air and gastric contents in both pleural cavities	Boerhaave[12] 1724
2	♂	?	+	Debauch the previous night	Sudden, after taking hot water to induce vomiting	Felt something give way; slightly hematemesis, severe pain, dyspnea; collapse	+	12	Longitudinal slit just above diaphragm admitting 2 fingers	Double pneumothorax; gastric contents in both pleural cavities	Dryden[13] 1787
3	♂	24	+	Severe epigastric pain and vomiting for several months	Sudden, during vomiting after dinner	Slight vomiting; severe epigastric pain	+	14	Large rent just above diaph'gm	Food found in pleural cavity	King[14] 1843
4	♂	38	+	Took lye when a child, since then difficulty in swallowing	Sudden, in attempting to swallow sausage which became impacted	Some hematemesis pain and dyspnea after effort to vomit	+	50	Gaping rent 1¼ by ¾ in. about 3 inches above cardia	Gangrenous cavity in posterior mediastinum; food in both pleural cavities	Meyer[15] 1858
5	♂	35	+	Gastric disturbance for 6 wks. before	Sudden, after a debauch	Vomited at first; pain, dyspnea; collapse	+	11½	Longitudinal tear 5 cm. long encroaching on stomach	Double pneumothorax; gangrenous cavity in posterior mediastinum; fluid in pleural cavities	Gramatzki[16] 1867
6	♂	49	±	Not given	Sudden, after abnormally large meal	Felt something give way during vomiting; pain; dyspnea; thirst; collapse	+	16	Longitudinal slit 1 inch long just above the diaph.	Three quarts of fluid containing food in left pleural cavity; lung collapsed	Griffin[17] 1869
7	♂	35	+	Drinking hard for several days before onset	Sudden, after vomiting	Felt something give way; pain; dyspnea; thirst; collapse	‡	7½	Slit 1½ in. long in left side of lower esophagus	Gangrenous cavity in posterior mediastinum opening into left pleural cavity contained 1 qt. of fluid.	Charles[18] 1870
8	♂	31	+	Repeated attacks of gastritis; hematemesis delirium tremens	Sudden, in trying to dislodge a piece of meat impacted in esophagus	Pain and dyspnea; fever	+	180	Rent 2 inches long	Infection of posterior mediastinum	Fitz[11] 1877
9	♂	17	—	Attacks of blood-poisoning short time previously	Sudden, during vomiting	Hematemesis; intense feeling of suffocation; pain; collapse	?	4	Rent 1½ cm. long 1 in. above cardia	Opening into left pleural cavity which contained food particles	Taendler[19] 1878
10	♂	53	—	Dyspepsia for yrs. with occasional vomiting	Sudden, after feeling unwell for 2 hours after a meal	Severe pain in left side and sudden collapse	‡	7	Rent in posterior wall 1½ inches above diaph'gm	.....	Adams[20] 1878
11	♂	48	?	Chronic gastric ulcer	Sudden	Vomiting followed by pain and collapse	—	15	Opening 2 inches long and 1 cm. wide about 2 cm. above cardia	Double pneumothorax; food in posterior mediastinum and both pleural cavities	Lindermann[21] 1887
12	♂	37	+	Good eater; alcohol moderate	Sudden nausea; felt something give way	Pain, collapse, cyanosis	+	Few	Clean tear 1 cm. long just above cardia	Left pleural cavity filled with food and gas	Wolff[22] 1894
13	♂	47	—	Dyspeptic; vomiting	Sudden, while vomiting	Pain, collapse, disappearance of cardiac dulness	+	13½	Rent 1½ inches long just above cardia	Left pneumothorax; stomach contents in both pleural cavities	Harrison[23] 1893
14	♂	55	‡	Healthy individual	Sudden, after vomiting	Pain, dyspnea, cyanosis	—	24	Rent ¾ inch long behind and to left	Food in left pleural cavity	West and Andrews[24] 1897
15	♂	59	+	Drinking hard for a week before	Sudden	Pain, dyspnea, effusion into left	+	37	Opening 1½ ins. long 2 inches above cardia	Accumulation in posterior mediastinum breaking into left lung but not the pleural cavity	Lindsay & Smith[25] 1899
16	♂	43	?	"Quiet"	Sudden vomiting after eating	Collapse	?	6	Rent 2 cm. long 6 cm. above cardia	Food in left pleural cavity	Heintze[26] 1900
17	♀	62	—	?	Sudden, after induced vomiting	Internal epigastric pain; dyspnea; collapse	+	22½	Rent ¾ inch long 1½ ins. above diaphragm	Collapse of lung; food in posterior mediastinum and left pleural cavity	Bowlers & Turner[27] 1900
18	♂	40	+	Drunkard; much vomiting	Sudden, probably during vomiting	Pain, dyspnea, cyanosis, collapse	+	10	Rent 1½ ins. long just above diaphragm extending into stomach	Collapse of lung; food and gas in posterior mediastinum and left pleural cavity	McWeeney[28] 1900
19	♂	55	+	Fell from horse, fracturing skull. Operation	Sudden, vomiting after coming out of anesthetic	Not known	—	10	Rent 1½ inches long just above diaphragm	Food in left pleural cavity	Whitman[29] 1903
20	♀	10	—	Always well	Sudden, during sleep	Nausea, cyanosis, shock	—	18	Rent 1 cm. long 5 cm. above diaphragm	Food in left pleural cavity	Miller[30] 1911
21	♂	43	?	?	Probably during anesthetic	Cyanosis, shock	—	11	Ragged rent 3 ins. above diaphr'gm	Right lung collapsed; stomach contents in posterior mediastinum and right pleural cavity	Roy[31] 1911
22	♂	39	—	Always well	Sudden, one hour after large meal	Shock, cyanosis	—	176	Rupture 2 inches long at lower end of esophagus	Fluid in left pleural cavity	Walker 1914

* In this column ♂ denotes male, and ♀ female. † In this column + means yes, — no, and ± probably. ‡ Not stated.

From observation of the case reported and data from two others, I believe that it may be a developmental condition associated with ptosis of the viscera. An explanation of this theory, however, should be reserved until further study has been made from necropsies on subjects having visceral ptosis.

Granted that this section of the esophagus is weaker than any other and also weaker than the stomach, rupture has been explained to take place in one of the following ways: During the act of vomiting or retching there is spasm of the esophagus above the weak point. If the pressure from within is less than is needed to overcome the spasm and sufficient to cause rupture, the latter takes place. Secondly, if food becomes impacted in the esophagus above the weak section during the act of vomiting, and similar conditions of pressure are brought to bear on this area, rupture will occur.

PATHOLOGY

The rent in every case has been at the lower end of the esophagus and longitudinal in all except two cases. Usually there is a single opening on the posterior wall. This leads into the cavity of the posterior mediastinum, which may contain food particles. In the majority of cases this cavity communicates with one or both pleural cavities, which also contain liquid and solid food tinged with blood.

DIAGNOSIS AND PROGNOSIS

Difficulty in making an early diagnosis in this condition is due to the fact that the symptoms are referred to the upper abdomen and not to the esophagus. Most patients give a history of alcoholism with chronic gastric disturbance, of having vomited after a large meal, and during the effort experience the feeling of "giving way" in the upper abdomen. The patient is in a state of marked shock with subnormal temperature, high pulse, profuse sweating and some cyanosis. The respirations are usually slightly elevated. The face is drawn and anxious and the patient lies or sits with the knees drawn upward. Pain is referred to the epigastrium and lower chest, either on the right or left, but usually the latter. There is marked tenderness and board-like rigidity throughout the upper abdomen. Chest examination may show a few râles at the base and sometimes hyperresonance or flatness on percussion depending on whether there is much air or fluid in the pleural cavity. The picture up to this time is that of acute perforation of a gastric or a duodenal ulcer or acute pancreatitis. As time goes on, and especially if the patient has swallowed any liquid, the symptoms point more to some chest condition. The respirations become rapid and shallow, and the temperature elevated. The chest-signs spoken of above become more pronounced and the heart pushed to the right, the area of heart dulness practically obliterated. Aspiration of the chest will reveal fluid and gas. If the former is examined microscopically, food particles may be distinguished. In some cases there will be emphysema of the chest and neck. In the series of cases reviewed, mine was the only one diagnosed during life, and that wrongly at first.

The prognosis in this condition is grave. Not a single case of recovery has been reported. Most patients die within twenty hours. The one reported by Fitz[11] lived 180 hours.

11. Fitz: Am. Jour. Med. Sc., 1887, lxxiii, 17.

TREATMENT

Very little except palliative measures can be found in the literature concerning treatment of this condition. From the observation of my case, it does seem possible that should the diagnosis be made early, there might be some chance of saving the patient by approaching the lesion through the posterior mediastinum, repairing the rent and draining the mediastinum and pleural cavity. Such an operation, however, would add much shock to a patient already in that condition so that recovery would be questionable. Even should the patient survive the operation a few days, one still has to combat sepsis in the posterior mediastinum, pleural cavity and lung-tissue. As yet, operative measures look none too bright. The case reported below occurred in my practice.

REPORT OF CASE

Patient.—A Swedish granite-cutter aged 39, was seen in consultation with Dr. Dion of Quincy at 1:30 a. m. March 16, 1914. Family history was negative. Patient had always been well. He had never used alcohol in any form.

Present Illness.—About seven hours before being seen patient had eaten an unusually large meal and taken two drinks of whisky. About one hour later he vomited. During this effort severe pain was felt in the epigastrium and left lower chest.

Examination.—Patient is well developed and nourished, somewhat cyanotic, and face has anxious expression. Pulse 120, temperature 97.6, respirations normal. Whole abdomen rigid but especially the upper half where there is marked tenderness and spasm. Liver dulness present.

Operation.—Incision 6 inches long at the outer border of the right rectus muscle over the gall-bladder region. Liver apparently enlarged, lower border of right lobe being on a level with the crest of the ileum, lower border of stomach about 1 inch below level of umbilicus. Appendix, stomach, duodenum, spleen and kidneys normal. Gall-bladder distended, ducts patent. Cholecystostomy performed; cigaret drain to head of pancreas which seemed swollen. Wound closed in layers.

Postoperative History.—During the next few hours the temperature and respirations became elevated. When patient was seen at 4 p. m. the pulse was 140, temperature 103, respirations 40. There was flatness in the left chest from the middle of the scapula downward and diminished and distant breathing in this region. Aspiration of the chest gave a straw-colored fluid. As it was thought that this was a beginning empyema, the pleural cavity was drained by resecting a piece of the eighth rib. The respirations at once were lowered. On the following morning, March 18, the nurse reported that all the nourishment taken was passing through the opening in the chest wall. March 19, a gastrostomy was done under novocain anesthesia and the patient afterward fed in this way. Temporary improvement followed feeding but the patient succumbed March 23, at 12:30 a. m., about 172 hours after the rupture of the esophagus.

Necropsy.—March 23, ten hours after death by Drs. Middleton and Ahlstrom. Well-nourished male, 6 feet tall, weight 165 pounds. Incision of operation 6 inches long slightly to right of median line starting 2 inches above umbilicus and extending upward from which hepatic fluid was escaping. There was a parallel incision 2 inches to the left of the median line 1 inch long. Incision in left back in midscapular line 1 inch below scapula and 2 inches in length. Liver enlarged, necrosis of lower border of right lobe. Gall-bladder macerated. Stomach incised and sutured to abdominal wall at site of smaller incision, evidently for feeding. Abdominal and pelvic viscera below liver apparently normal. Entire back and outer side of right lung adherent to chest wall. A few pleural adhesions at back of left lung. Left pleural cavity contained, throughout its extent, a thick, sticky, grayish-yellow fluid. There is a rupture of the

extreme lower end of the esophagus, 2 inches in length, extending upward from the cardiac end of the stomach. Rupture on posterior wall of the esophagus. Edges of rent clean-cut, no evidence of ulcer, new growth or diverticulum.

A brief review of the unquestionable cases reported in the literature follows: Number of cases, twenty-two; males, twenty; females, two. Average age, 41.3 years. Of the males eleven were addicted to alcohol, four were abstainers, four were questionable and one not stated; neither of the females used alcohol. Emphysema was present twelve times, absent six times, questionable in two, not stated in two. No patient recovered, the average duration of life being 30.4 hours.

CONCLUSIONS

1. Spontaneous rupture of the apparently healthy esophagus is a rare condition.
2. The exact cause is not known.
3. Accurate diagnosis is difficult to make.
4. The mortality will always be high.

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NOTE.—In addition to the references in the text, the following will be found of interest:

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FOUR YEARS' EXPERIENCE WITH SALVARSAN AND NEOSALVARSAN IN THE TREATMENT OF NERVOUS DISEASE DUE TO SYPHILIS *

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Soon after the release to the profession of Ehrlich's first synthetic arsenic product, the ultra-enthusiastic gave forth the cry to the carrier of the *Spirochaeta pallida* that the *salvator hominum* had been found. The extremely conservative held the more tenaciously to mercury, the approved therapy of centuries, and pessimistically pictured the dangers of salvarsan. While as yet our conclusions may not be beyond the pale of dispute, it may prove valuable to make a reckoning of the experience of four years in the continuous use of the powerful drug. That a new era in the treatment of syphilis has been entered there can be no doubt. The discovery by the lamented Schaudinn, the dark-field microscope and the ingenious adaptation by Wassermann of the Bordet-Gengou biochemical reaction have set our feet on firm rock in our determination of skin and visceral syphilis. Colles' law has been given the lie; Profeta's dogma has been discarded. By the achievement of Noguchi and Moore the parasyphilitic wraith has vanished forever "into thin air," revealing the reality, the syphilogenous nature of general paresis and tabes, and making certain that the findings in the spinal fluid represent to a degree, in these cases, the ravages of the pale spirochete on the investments and substance of the central nervous system. It is from the treatment of three hundred cases of syphilitic affections of the nervous system that our conclusions shall be drawn.

The nervous system in most persons is particularly tolerant to the toxins of syphilis, or better said, the nervous system performs its functions patiently and faithfully without display of symptoms for from ten to thirty years while its very vitals are being destroyed by a chronic intoxication, before it finally manifests that all is not well. From this fact grew our misconception called latent syphilis. With our present laboratory aids we know now that evidence of invasion of the central nervous system may occur within a few weeks of the time of the initial lesion. Indeed, occasionally we meet a case in which even before the so-called cutaneous secondary rash has appeared, or while it is still present, the central nervous system has been overwhelmed and the fluid which bathes it shows a marked cellular exudate. This knowledge of the early invasion of the central nervous system forewarns us emphatically that the most auspicious moment for the treatment of syphilitic nervous affections is in that all-important time which may be termed the tolerant period.[1] This period having passed by and the toxin having been at work subtly for years in a subterranean manner, the defenses yield at last, and grievous evidence that the enemy is within the walls appears. It is at this point that the neurologist is usually summoned to combat the inroads of the invader. We can now, in a comparatively short period, proceed to check the invasion in a manner almost as cunning as the enemy's own methods and can preserve the integrity of that portion of the system which has not been actually destroyed. Having rid ourselves of the blighting delusion of the specificity of potassium iodid and of the futility of mercury by mouth, and even intramuscularly or by inunctions when given in the indifferent manner which has too long prevailed, we take hold eagerly of the new remedy which is more rapid, more certain and more complete in its action.

Salvarsan is not a panacea. Nothing could militate more against the correct evaluation of the efficiency of this remedy than its promiscuous use and the impression that a few doses of salvarsan will restore health in all cases of syphilitic nervous disease regardless of their duration and severity. We do not wish to give the impression that we would deny to any definitely syphilitic person the advantage of salvarsan treatment, but we do believe that it is unjust to both patient and

* From the Neurological Institute, New York.

1. Graves: Med. Rec., New York, Aug. 24, 1912.

remedy to promise or expect the regeneration of destroyed nervous tissue with restoration of function. For instance, to predict great improvement to a tabetic patient whose ataxia has existed for ten or fifteen years with pronounced hypotonus, vesical incontinence and negative serum and spinal fluid, is not only unfair, but is detrimental to the establishment of the true value of salvarsan. On the other hand, in the acute cases with symptoms more or less recent, with an active reactionary and inflammatory process in the tissues as revealed by the blood and spinal fluid, the therapeutic capability of salvarsan is often but little short of miraculous. When one encounters one day a man stricken down at his work, irrational and aphasic, and forty-eight hours later beholds him speaking and in his right mind, one cannot but believe that a potent agent has been applied. One is driven to a similar conclusion when one sees men come into the hospital on crutches and go out a few weeks later walking alone or aided slightly by a single cane, which is later discarded.

It is in the recent and acute cases that the use of salvarsan cannot be too strongly urged.

METHOD OF ADMINISTRATION

The use of salvarsan at the Neurological Institute was begun in June, 1910. Since that time upward of 1,500 administrations of salvarsan and neosalvarsan have been made on the First Division Service. The routine method of preparation and administration has been but slightly altered during these four years. The quantity of freshly distilled sterilized water has been reduced, 25 c.c. being used for each 0.1 gm. of salvarsan, and 10 c.c. for each 0.1 gm. of neosalvarsan. We are not convinced of any increased therapeutic value of concentrated dosage, such as giving a full dose in 10 or 20 c.c. of water; but such decrease in the quantity of fluid as we have made we believe can be done with safety and a considerable saving of time. Intravenous administration is the method of choice, the intramuscular method being usually painful, less prompt in its effects and often complicated by subsequent undesirable features, such as permanent induration or abscess. Cutting down on a vein is barbarous and unnecessary except in extremely corpulent persons with obscured veins, as with a little care a needle can be introduced into a vein in the cubital space without difficulty. In treating very young children the intramuscular method is sometimes necessary. In introducing salvarsan into the vein the gravity method has proved simplest and most practicable.

EFFECTS OF SALVARSAN

During the past twelve months we have had a growing conviction that the potency of neosalvarsan is not so great as that of salvarsan, so that we have returned to the use of the original preparation. The immediate after-effects of the newer compound are usually milder, but its curative value is also less. Others working with cases not neurologic have arrived at the same conclusion.[2] The immediate after-effects, when unpleasant at all, are limited to nausea or vomiting or the recurrence of tabetic pains, all of which with the aseptic precautions now used are comparatively rare. The latter symptom is probably due to the increased tension in the roots or root ganglia resulting from the influx of scavengering leukocytes which come in to carry away the recently killed spirochetes. Within twenty-four or forty-eight hours the patient usually experiences a feeling of well-being such as he has not had for some time, and if he has been having pains they have disappeared. In fact, after the first dose of salvarsan, tabetic pains which may have tortured the patient for a decade or more may disappear never to return. If we were called on to select the single greatest benefit which follows the use of salvarsan, it would be the relief obtained by the disappearance of the hideous pains of tabes. Man can endure almost any disability if he is free from pain. Fortunately, that is not the sole benefit, but that is usually the first lasting improvement. Subsequent improvements and final results following the administration of salvarsan in nervous diseases of syphilitic origin depend entirely on the character and duration of the disease.

TROPHIC DISEASE

Forms of disease styled trophic, such as Charcot joint, have given very little encouragement that a remedy has been found in salvarsan. The insufficiency of the therapy becomes apparent when one sees the disintegrating process in the joint go steadily on even though the serologic vestiges of syphilis have been rendered negative.

CEREBRAL ENDARTERITIS

Another variety of case resulting from syphilis, which is treated with meager success, is cerebral endarteritis which has gone on to thrombosis or rupture. The hemiplegic patient is usually seen in a neurologic clinic some weeks or months after the "stroke," after the edema around the lesion has largely subsided. If syphilitic, he will show a positive Wassermann in serum or spinal fluid or both, but a cellular exudate in the spinal fluid is almost always wanting. True, an endarteritis may occur in a tabetic or a cerebrospinal luetic patient, in which case the spinal fluid will show an increase in cells. The cells may be caused to disappear and the Wassermann to become negative, but salvarsan has not been observed to affect to any considerable extent the symptoms resulting from the arteritis, allowing for the slight improvement which usually occurs spontaneously. Endarteritis, occurring early in the disease and giving rise to focal symptoms, usually yields quite readily to salvarsan therapy, if an area of softening has not already occurred.

SENSORY-TRACT DISEASE

In a discussion of the results obtained in the treatment of tabes with salvarsan, the cases fall readily into two classes. First, those of long standing in which, besides the ataxia, marked hypotonus has developed, and an examination of the serum shows that the active inflammatory resistance on the part of the body has subsided either because the syphilitic process has been overcome, which is more probable, or because the tissues have become so used to the chronic intoxication that they no longer resist — in short, those cases in which the Wassermann reaction in serum or spinal fluid, or in both, is negative, and the cellular elements in the spinal fluid are absent or few, or only slightly above normal. The citation of a few such cases will serve best to make this clear:

2. Nelson, Kent, and Haines, Edgar F.: Observations of the Results of Nine Months' Experience with Neosalvarsan at the United States Military Prison Hospital, Fort Leavenworth, Kan., THE JOURNAL A. M. A., March 28, 1914, p. 989.

CASE 1.—W. H., man, aged 44, married. Complaint: Unable to walk or stand alone. Urinary incontinence. Pain in the legs and arms, shooting in character. Numbness and tingling in the hands and feet. Belt-like sensation around the lower ribs, at other times around the abdomen.

Duration two and one-half years. Progressively worse. Chancre twenty-five years before.

Examination.—Marked ataxia and hypotonus; unable to stand alone. Absent tendon-jerks. Postural sensation in the lower extremities wanting. Argyll Robertson pupils and emaciation. Wassermann serum positive; Wassermann fluid negative; Globulin positive; Cells 56 per cubic millimeter.[3]

Treatment.—Salvarsan, 0.6 gm., three doses, and tonic measures.

Six months later the patient's condition was quite the same, without any interval of appreciable improvement. Wassermann serum negative.

CASE 2.—L. M., man, aged 36, married. Complaint: Girdling pains in the right groin and shooting down the legs. Drawing and gripping in the back and arms, unsteadiness in walking. Polyuria and dysuria. Loss in weight and strength. Duration eight years. Chancre eighteen years before.

Examination.—Ataxic gait. Rombergism. Considerable hypotonus and impaired postural sense. Absent tendon reflexes and Argyll Robertson pupils. Wassermann serum positive; fluid negative; globulin negative; cells 3 per cubic millimeter.

Treatment.—Salvarsan, 0.6 gm., three doses; neosalvarsan, 0.9 gm., one dose.

Three years after the first dose the patient was still having attacks of the same pains, was markedly ataxic and showed the same physical signs. Wassermann serum negative; fluid negative; globulin negative; no cells.

CASE 3.—E. R., man, aged 53, widower. Complaint: Attacks of gastric pain. Pain of jerking character in the legs. Dysuria. Numbness in the soles. Duration seventeen years, progressively worse. Chancre twenty years before.

Examination.—Argyll Robertson pupils, slight Rombergism. Absent knee and ankle reflexes. Ataxia not marked. Wassermann serum negative, fluid negative; globulin negative; mononuclear cells 53.

Treatment.—Neosalvarsan, 0.9 gm., three doses; 0.45 gm., one dose, within three weeks.

Observation seven months later shows no alteration in the patient's condition. He still complains of the pains in his legs and numbness. The dysuria is possibly improved. Wassermann serum negative; fluid negative; globulin negative; no cells.

In the second class of tabetics the condition is of more recent development and usually the infection is more recent. To the majority of patients of this class a very good prognosis can be laid down, based, of course, on the serologic findings. Considerable difficulty often arises here in making a correct estimate of the case inasmuch as these are the patients who, during the past decade, have been the rounds of mercury pills and potassium iodid drops. The inefficiency of the treatment "stands condemned by its eloquent results," as Fordyce[4] has so aptly put it. The difficulty lies in the fact that the iodid treatment may have affected the condition of the serum in its relation to the Wassermann reaction, which is our compass in directing antisyphilitic therapy, without having done any real damage to the spirochete. Fortunately for this particular feature, the patience of the average patient soon wearies of an oft-repeated remedy which produces no marked visible results, and so the reaction of the serum remains more or less unmodified by the "drops and pills" and is a true guide. In those cases favorable for treatment, hypotonus of the hip-joints has not developed, although vesical incontinence may be present as well as ataxia and impairment of the postural sense. These symptoms may disappear in whole or in part, but in many cases even after vigorous treatment, vestiges of the symptoms remain. In such cases the Wassermann reaction is usually plus in the serum, and plus or minus in the spinal fluid; the globulin excess is plus; mononuclear cells range from twenty to several hundred per cubic millimeter, and Fehling reduction is plus. The treatment in such a case does not consist in two or three injections of salvarsan, but aims to render negative the Wassermann reactions and to reduce the number of cells to zero. The most vigorous treatment may be necessary to accomplish this result. It may take five injections at frequent intervals, or it may take twenty more. One method which we employed was to give a series of four full doses of neosalvarsan with a forty-eight hour interval between doses, and then after two weeks to repeat this if necessary. This method we have given up and are now employing salvarsan in full doses every five or seven days for a greater or less period, being guided chiefly by the state of the spinal fluid, especially with regard to the cell-content. The following cases will illustrate this group:

CASE 4.—F. B., man, aged 47, married. Complaint: Pain in the back and legs, occasional vesical and rectal incontinence; depressed, speech halting at times, hands tremulous, morphin habit. Duration six years, progressive. Chancre seventeen years ago.

Examination.—Slight Rombergism, no ataxia, knee and ankle reflexes absent. Pupils unequal but respond to light. Wassermann serum negative; cerebrospinal fluid positive; globulin positive; mononuclear cells 90.

Treatment.—Neosalvarsan, 0.9 gm., four doses within one month. Observation three months later: Pains have disappeared. Has stopped morphin. General condition improved. No incontinence. Physical signs remain the same. Pupils sluggish. Now able to earn his living. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; cells 17.

CASE 5.—J. M., woman, aged 35, married. Complaint: Shakiness and weakness in both legs; pains in knees and legs; jerking in arms and legs at night. Drops articles from her hands. Drooping of left lid; dimness of vision. Duration five years. Stationary, lues denied.

Examination.—Slightly ataxic gait; Rombergism; Argyll Robertson pupils; left facial weakness. Hemorrhage into vitreous of right eye. Incoordination of arms. Knee and ankle reflexes absent. Wassermann serum positive; cerebrospinal fluid positive; globulin positive; mononuclear cells 42.

Treatment.—Neosalvarsan, 0.9 gm., three doses within three weeks. Observation nine months later: The ataxic gait has disappeared. Facial weakness gone. No Rombergism. Reflexes and pupils same; vitreous clear. Feels quite well. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; mononuclear cells 4.

CASE 6.—A. D., man, aged 45. Complaint: Weakness in right leg. Heaviness of right thigh and abdomen. Walking difficult.

Examination.—Ataxia, Rombergism; Argyll Robertson pupils, absent ankle and knee reflexes. Hypotonus of lower extremities. Hyperesthesia at sacral crests. Duration two months; progressive; lues denied. Wassermann serum negative; cerebrospinal fluid negative; globulin positive; mononuclear cells 81.

Treatment.—Salvarsan, 0.6 gm., two doses at interval of seven days. Observation one month later; walking easier and better, ataxia less. Slight heavy feeling still present, heavy in right thigh. Reflexes and pupils the same. Continues to

3. In all the cases reported in this paper Fehling's solution was reduced by the spinal fluid.

4. Fordyce, John A.: The Administration of Salvarsan in Syphilis, THE JOURNAL A. M. A., Oct. 5, 1912, p. 1231.

work as salesman. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; mononuclear cells 8.

CASE 7.—L. L., man, aged 36, married. Complaint: Loss of strength, pain and cold sensation in both legs. Vesical incontinence, tightness about the chest. Duration four years; progressive. Chancre fourteen years ago.

Examination.—Romberg; ataxia; walks with cane. Uncertain in sitting posture; moderate hypotonus in hips. Incoordination in arms and legs. Reflexes absent in biceps and triceps, knees and ankles. Argyll Robertson pupils; tactile anesthesia over lower extremities.

Wassermann serum positive; cerebrospinal fluid negative; globulin weakly positive; mononuclear cells 142.

Treatment.—Neosalvarsan, 0.9 gm., six doses within six weeks. Observation one year latter: Feels well; much less dependent on cane in walking. Paresthesia and pain gone. No vesical incontinence. Can attend to business.

Examination.—Romberg and ataxia less marked; other findings the same. Wassermann serum positive; cerebrospinal fluid negative; globulin negative; mononuclear cells 48.

CASE 8.—M. V., man, aged 44, married. Complaint: Pain down the back of the legs and inability to walk without crutches. Duration 9 months; progressive. Lues denied.

Examination.—Walks uncertainly with crutches. Rombergism. Absent knee and ankle reflexes. Pupils irregular, unequal, very sluggish to light. Wasserman serum positive; cerebrospinal fluid negative; globulin negative; mononuclear cells 33.

Treatment.—Neosalvarsan, 0.9 gm., three doses. Observation one month later, improvement remarkable. Walks alone without crutch or cane. Ataxia scarcely noticeable. Reflexes and pupils remain unchanged. Lumbar puncture refused. Wassermann serum positive.

CASE 9.—F. D., man, aged 47, married. Complaint: Paresthesia of left hand. Loss of power and control of legs; wasting of left leg. Pains in legs and in the bones. Urinary incontinence, walks with crutches. Duration eight years; progressive. Chancre twenty-six years ago.

Examination.—Ataxic gait, Rombergism. Partial paralysis left thigh and leg. Tremor of hands; incoordination of arms and legs. Knee and ankle reflexes absent. Pupils unequal, sluggish to light. Hypesthesia of legs. Wassermann serum negative; cerebrospinal fluid positive; globulin positive; mononuclear cells 135.

Treatment.—Salvarsan, 0.6 gm., five doses in four weeks. Observation three months later: Ataxia much diminished. Gait improved. No pain, paresthesia still present. Pupils sluggish to light. Knee- and ankle-jerks absent. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; mononuclears 32.

CASE 10.—M. B., woman, aged 36, married. Complaint: Legs feel weak and trembly; pain down outer side of both calves, feet cold and numb; drops articles occasionally from left hand; difficulty in walking. Duration five years, getting worse recently. No knowledge of infection.

Examination.—Slight Rombergism, unsteady gait, slight hypotonus of hips and knees, incoordination and postural disturbance of lower extremities. Absent knee- and ankle-jerks, also gone in the arms. Argyll Robertson pupils. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; mononuclear cells 107.

Treatment.—Salvarsan, 0.6 gm., four doses in a month. Three months later felt much stronger, no pain; normal feeling in extremities, but had a girdle sensation; gait much improved but still some unsteadiness. Wassermann serum positive; cerebrospinal fluid negative; globulin negative; cells 13.

Treatment.—Salvarsan, 0.6 gm., one dose, and thirty inunctions of mercury. Five months later only one remaining symptom is slight unsteadiness in walking; pupils and reflexes unchanged. Romberg less. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; cells 5.

CASE 11.—C. J., man, aged 50, married. Complaint: Pain in the middorsal region which starts in the back and runs around the trunk to the epigastrium. Jumping pains and soreness in the thighs. Tense, tight feeling about the abdomen; morphin regularly for pain. Duration seven years, progressive. Chancre twenty-seven years before.

Examination.—Rombergism, very slight ataxia, tremor in the hands, no hypotonus, left knee-jerk absent, right diminished, ankle-jerks gone. Argyll Robertson pupils. Wassermann serum positive; cerebrospinal fluid negative; globulin positive; mononuclear cells 42.

Treatment.—Salvarsan, 0.6 gm., three doses in three weeks, cauterization of the back. One month later patient was entirely free from pain and tight sensation; has taken no morphin and has no desire for it. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; cells 0.

CASE 12.—F. G., man, aged 55, married. Complaint: Shooting pains in the legs, difficulty in walking; frequent desire to urinate, diplopia, band sensation about the waist, weakness of the back. Duration eighteen years; progressive; worse. Chancre twenty-six years ago.

Examination.—Very ataxic gait, marked Rombergism, incoordination of legs, absent knee and ankle reflexes. Argyll Robertson pupils. Wassermann serum positive; cerebrospinal fluid positive; globulin positive; mononuclear cells 42.

Treatment.—Salvarsan, 0.6 gm., three doses in ten days. One month later shows less ataxia in walking, is free from pain and girdle tightness and general feeling of more strength and vigor. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; cells 36.

CASE 13.—E. L., woman, aged 50, married. Complaint: Sharp shooting pains through both lower extremities to the feet, also through the arms to the hands. Aching pains through the head recently, creeping feeling all over the body; numbness in the buttocks; tightness around the abdomen, loss of appetite, gastric pain and obstinate constipation; dysuria. Knees give way under her. Duration seven years, getting rapidly worse. Rash and sore throat eleven years before.

Examination.—Rombergism, slight ataxia, no hypotonus, absent knee and ankle reflexes, pupils equal, very sluggish to light. Wassermann serum positive; cerebrospinal fluid positive; globulin positive; mononuclear cells 137.

Treatment.—Salvarsan, 0.3 gm., two doses; 0.6 gm, two doses in six weeks. Six months later she was enjoying exceptionally good health, free from pain. Is hyperesthetic around the left side of chest. Constipation severe. Dysuria gone. Paresthesia greatly diminished. No difficulty in walking. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; no cells.

While the object of antisyphilitic treatment is sterilization of the spinal fluid and blood, it will be noted that this was not attained in several of the foregoing cases. This was due chiefly to imperfect cooperation on the part of the patients in returning for treatment. But even when the cooperation is complete and the treatment most vigorous, there is a small percentage of cases in which the Wassermann in the serum is so persistent as to justify the term "Wassermann-fast," as recently applied by Dr. David M. Kaplan,[5] director of the laboratory of the Neurological Institute. The report of one such case will suffice:

CASE 14.—The patient is a professional man aged 47, unmarried, who came complaining of incomplete control of his legs, weakness and awkwardness in walking associated with numbness in the peroneal region and a cushion sensation under the ball of the foot, with an occasional pain in the legs. This condition had been remarked during the past four months. He recollected having had an indefinite sore on the penis, to which he paid no attention, which healed spontaneously.

5. Kaplan, D. M.: The "Wassermann-Fast Tabes," THE JOURNAL A. M. A., Dec. 20, 1913, p. 2214.

Examination showed a moderate Romberg, unsteadiness of gait, fine tremor of the hands and lips on effort, absent knee and ankle reflexes and very small equal pupils wanting in reaction to light. Tabes being evident, he was given the treatment recorded in Table 1.

Besides the arsenical treatment he has come faithfully every week and received 1 grain of mercury in the form of salicylate intramuscularly for the past forty weeks. He has never missed a day at work during this period except when he was laid up twenty-four hours for lumbar puncture. To-day he is hale and strong, feels exceptionally well and is engaged in a busy professional career. His mind is unclouded, his tremor has disappeared, his walking is above suspicion and his Rombergism is gone. His reflexes at the knee and ankle are still absent and his pupils are smaller than the head of a pin and are immovable to light.

TABLE 1.—EFFECT OF TREATMENT IN CASE 14, CHRONOLOGICALLY CONSIDERED

Date	Serum Wassermann	Cerebrospinal Fluid				Salvarsan, gm.	Neosalvarsan, gm.
		Wassermann	Globulin	Cells	Fehling's Solution Reduction		
11/29/10	+	+	—	94	+	...	....
12/ 3/10	..	..	..	..	..	0.6	....
12/20/10	+	+	—	68	+	...	....
2/ 8/11	..	..	..	..	..	0.6	....
4/18/12	+	+	—	79	+	...	....
4/19/12	..	..	..	.	..	0.6	....
4/25/12	..	..	..	..	..	0.3	....
5/ 2/12	..	..	..	..	..	0.3	....
5/ 9/12	..	..	..	..	..	0.3	....
5/10/12	+	—	—	36	+	...	....
5/16/12	..	..	..	..	..	0.3	....
6/11/12	..	—	—	12	+	...	....
10/ 8/12	..	..	..	..	..	...	0.9
10/15/12	..	..	..	..	..	...	0.9
10/21/12	..	..	..	..	..	...	0.9
10/24/12	..	..	..	..	..	...	0.9
11/ 8/12	..	..	..	..	..	...	0.9
11/21/12	..	..	..	..	..	...	0.9
12/ 6/12	+	..	..	..	..	...	0.9
12/19/12	..	..	..	..	..	...	0.45
1/10/13	+	—	—	8	+	...	0.9
1/23/13	+	..	..	..	..	...	0.9
3/ 7/13	+	..	..	..	..	...	....
3/20/13	+	..	..	..	..	...	....
5/27/13	+	—	—	5	+	...	0.9
7/18/13	+	..	..	..	..	...	....
10/ 4/13	+	+	—	35	+	...	0.45
10/11/13	..	..	..	..	..	...	0.45
10/18/13	..	..	..	..	..	...	0.45
10/25/13	+	..	..	..	..	...	0.45
11/ 1/13	+	—	—	12	+	...	0.45
11/ 8/13	..	..	..	..	..	...	0.45
1/23/14	+	—	—	28	+	0.3	....
3/29/14	..	..	..	..	..	0.5	....
4/11/14	..	..	..	..	..	0.4	....
4/18/14	..	..	..	..	..	0.5	....
4/25/14	+	—	—	13	+	0.5	....

OPTIC-NERVE ATROPHY

Early adverse criticism of results following salvarsan administration made capital of the fact that optic-nerve atrophy was sometimes observed. Faulty technic may have been the cause of such a sequela, but from our observations we are inclined to believe that the optic atrophy was already in process, although perhaps not demonstrable, at the time that the drug was given. For we have seen an incipient optic atrophy the result of syphilitic virus go steadily forward to complete atrophy while under vigorous salvarsan therapy.

CASE 15.—O. L. R., man, aged 41, married. Complaint: Pains through the trunk, in the elbows and knees, girdle pains, vesical incontinence, obstinate constipation. Poor control of legs, inability to walk in the dark. Hypotonus. Duration one year; progressive; chancre ten years before.

Examination.—Romberg, Argyll Robertson pupils; diplopia. External strabismus left eye. Slight diffuse pallor each optic disk, visual fields slightly reduced. Knee and ankle reflexes absent, also gone in biceps and triceps. Wassermann serum positive; cerebrospinal fluid positive; globulin weakly positive; mononuclear cells 110.

Treatment.—Neosalvarsan, 0.9 gm., five doses in three months; salvarsan, 0.3 gm., four doses during succeeding nine months. Observation one year later: no pain, no incontinence, but still ataxic. Pallor of optic disks very pronounced, visual fields much reduced, sight almost gone in the left eye. Strabismus still present. Wassermann serum positive; cerebrospinal fluid positive; globulin positive; mononuclear cells 33.

On the other hand, we have observed a progressing optic-nerve atrophy held in check by the use of salvarsan; in fact, vision improved after therapy.

CASE 16.—J. D., man, aged 37, married. Complaint: Failing vision for two and a half years, cannot now see to read. Hearing also failing. Sharp, stabbing pains in the legs, at other times cold sensation in the legs; indescribable disagreeable sensation in the abdomen. Chancre 15 years ago. Treated for eight months with mercury and potassium iodid by mouth.

Examination.—Nutrition good, no Romberg, no ataxia, no hypotonus, very little postural disturbance. Knee reflexes diminished, ankle-jerks present. The pupils are equal but irregular and moderately dilated. Reaction to light is almost imperceptible, but good in accommodation. Visual fields reduced. Counts fingers at 4 feet. Fundi show marked optic atrophy. Wassermann serum positive; cerebrospinal fluid positive; globulin positive; mononuclear cells 10.

He developed an acute mania and spent eight weeks in a state hospital. Three months after examination he received three doses of neosalvarsan within ten days. Four months later the physical signs were unchanged. The optic disks still showed an unaltered marked atrophy. He could now count fingers across a room, recognize persons and go about unaided without difficulty. Ten months after treatment, however, vision was definitely failing.

When laying stress on the beneficial results following the use of salvarsan it is well for us to bear in mind the remarkable curative power which Nature alone possesses. A case which emphasizes this point is as follows:

CASE 17.—J. Q., man, aged 35, single. Complaint: Lightning pains in the legs, great difficulty in walking, unable to stand alone, difficulty in starting the stream of urine, occasional rectal incontinence, severe abdominal cramps at times and double vision. This condition had developed during the past three years and was now practically stationary. He had had a chancre twenty years before, which was untreated.

Treatment.—This consisted of four months of weekly intramuscular injections of mercury and two injections of salvarsan, six months ago, from which he experienced little relief. One month ago he came down with typhoid fever from which he has just recovered. On examination he is badly emaciated, unable to stand alone, profoundly ataxic, the tendon reflexes are gone and the pupils rigid to light. Wassermann serum negative; cerebrospinal fluid negative; globulin weakly positive; mononuclear cells 28 per cubic millimeter.

Neither the patient's condition nor the reaction of the serum warranted active syphilitic treatment; so he was placed on tonic measures, as massage baths, electricity and such exercise as he was able for. After two months he had gained 30 pounds in weight and was correspondingly stronger. He could stand and walk alone, with moderate ataxia. His pains had ceased, his diplopia, dysuria and rectal incontinence had disappeared. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; cells 3.

Here was a man who had sufficient treatment six months before to render negative his Wassermann reactions without improvement in symptoms, succumbing to an acute infectious disease, during the conval-

escence from which his cerebrospinal fluid passed from the pathologic to the normal state and his symptoms were vastly ameliorated without antisyphilitic remedy. Considerable theorizing might be done, but the indisputable fact is the remarkable recuperative and reparative power of the body tissues on which we can depend in combating the toxins of syphilis.

Table 2 shows what a striking effect salvarsan and neosalvarsan have on the Wassermann reaction, globulin content and cell-count in the cerebrospinal fluid in tabes dorsalis.

MOTOR-TRACT DISEASE

Turning now from diseases in which the virus of syphilis has wrought greatest havoc on the sensory tracts, let us consider the possibilities in dealing with those whose symptoms are chiefly dependent on disturbance of the motor paths. While the disabling of motor paths, for example, ptosis or diplopia, is in the majority of instances the first symptom that strikingly calls the patient's attention to the late effects of syphilis, there can be little doubt that the earliest inroads are made on the sensory tracts. It is usually possible to elicit from an intelligent patient the appearance of subjective sensory disturbances previous to the occurrence of motor symptoms. This opinion, which is now held by most neurologists, has recently been reaffirmed by Holmes[6] in an article on tabes.

In those cases, fortunately relatively fewer, in which the motor system bears the brunt of the attack of the virus of syphilis, the results of antisyphilitic therapy are usually less fortunate than those obtained in disease of the sensory system. There is apparently no means of prognosticating the result either from the clinical picture or from the Wassermann reaction, especially when the myelitis produces a spastic paraplegia or an Erb paralysis. Paralyses resulting from involvement of the third, fourth or sixth cranial nerve yield more readily to salvarsan, especially if of recent origin. Although the results of many of the spastic paraplegias due to syphilis are not all that we could wish, there is a sufficient number of recoveries which approximate the normal to justify pushing this form of therapy in all such cases at least to the point of rendering the reaction negative. As examples of this class, the reports of two similar cases follow. One patient recovered, the other did not.

CASE 18.—E. F., woman, aged 36, married. Complaint: Unable to walk or stand; absolutely no control of bowels or bladder, diplopia on looking downward, cord-like tightness around the abdomen. Duration eleven weeks. No knowledge of infection. Two children died in first year of life, three living.

Examination.—Cannot stand, cannot move her lower extremities at all as she lies in bed; entirely incontinent, moderate incoordination of both upper extremities. Knee and ankle reflexes plus, double Babinski, double ankle clonus, abdominal and epigastric reflexes absent, normal in the arms; left palpebral aperture narrowed, eye turns slightly outward in looking down. Right pupil rigid to light, left small but responds. Fundi normal. Belt of hypesthesia from sixth to twelfth dorsal segment distribution. Wassermann serum negative; cerebrospinal fluid negative; globulin positive; mononuclear cells 80.

Treatment.—Neosalvarsan, 0.9 gm., every second day for four doses, and massage. Four weeks later neosalvarsan, 0.9 gm., two doses within a week. Fifteen months later patient had gained 40 pounds in weight, going about doing the housework; walks without support with slight wavering,

TABLE 2.—EFFECT OF SALVARSAN AND NEOSALVARSAN IN TABES DORSALIS

No. of Example	Serum, Wassermann	Cerebrospinal Fluid Wassermann	Cerebrospinal Fluid Globulin Excess	Cerebrospinal Fluid No. Cells	Reduction of Fehl'g's Solution	Salvarsan, Gm.	Number of Doses	Neosalvarsan	Number of Doses	Serum Wassermann	Cerebrospinal Wassermann Fluid	Cerebrospinal Fluid Globulin Excess	Cerebrospinal Fluid No. Cells	Reduction of Fehling's Solution
1	—	—	—	107	+	0.6	3	0.9	2	—	—	—	5	+
2	+	+	—	70	+	0.6	2	0.9	4	+	—	—	15	+
3	—	+	+	90	+	...	..	0.9	4	—	—	—	17	+
4	+	—	+	142	+	0.6	1	0.9	5	—	—	—	2	+
5	—	—	—	22	+	...	..	0.9	2	—	—	—	0	+
							..	0.45	1					
6	—	+	+	96	+	...	..	0.9	4	—	+	—	21	+
7	—	+	+	81	+	0.6	2	....	..	—	—	—	8	+
8	+	+	+	33	+	0.6	1	0.9	1	—	—	—	32	+
9	+	+	+	42	+	0.6	2	....	..	—	—	—	3	+
						0.3	1							
10	—	+	+	55	+	...		0.9	2	—	+	—	33	+
							..	0.45	1					
11	+	+	+	135	+	0.6	2	....	..	—	—	—	32	+
12	+	+	+	192	+	0.6	2	0.9	2	—	—	—	16	+
						0.3	3							
13	+	—	+	42	+	0.6	3	....	..	—	—	—	0	+
14	+	+	+	42	+	0.6	3	....	..	—	—	—	36	+
15	+	—	—	53	+	0.6	3	....	..	+	—	—	5	+
						0.3	1							
16	+	—	—	3	+	0.6	3	0.9	1	—	—	—	0	+
17	+	—	+	273	+	0.6	2	....	..	+	—	—	11	+
18	—	—	—	61	+	0.6	4	....	..	—	—	—	13	+
19	—	—	—	53	+	0.6	4	....	..	—	—	—	0	+
20	+	+	—	6	+	0.3	4	....	..	—	—	—	0	+
21	+	+	+	96	+	0.3	3	....	..	—	+	—	15	+
22	+	+	+	137	+	0.6	3	....	..	—	—	—	0	+
23	—	—	—	142	+	0.6	5	....	..	—	—	—	36	+
24	+	+	+	50	+	0.6	2	....	..	—	—	—	21	+
25	+	+	+	94	+	0.6	9	....	..	+	—	—	36	+
EFFECT IN TABES SOMETIMES OCCURRING AFTER ONE INJECTION OF SALVARSAN														
1	+	+	+	135	+	0.6	1	...	..	—	—	—	26	+
2	—	—	—	33	+	0.6	1	....	..	—	—	—	9	+
3	+	—	—	253	+	0.6	1	....	..	+	—	+	59	+
4	+	+	+	128	+	0.6	1	....	..	—	—	—	69	+

6. Holmes, Gordon: The Diagnosis of Tabes Dorsalis, Brit. Med. Jour., March 14, 1914, p. 573.

but securely; has no incontinence, no diplopia, no pain, no paresthesia.

Examination.—This reveals the tendon reflexes still plus, double Babinski, left exhaustible ankle clonus. Pupils unchanged. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; no cells.

CASE 19.—W. S., man, aged 41, married. Complaint: Legs are weak and shaky; legs jerk up in bed; pain about the waist; impotent; not incontinent. Duration six months, much worse recently. Chancre fourteen years ago, also secondary rash. Treatment for three years with mercury and iodid.

Examination.—Sways in Romberg position; walks stiff leggedly scraping toes; knee reflexes plus; double ankle and patellar clonus; double Babinski; epigastric reflexes absent; abdominals and cremasterics sluggish; pupils unequal but respond to light and accommodation. No demonstrable sensory disturbance. Mental examination negative. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; mononuclear cells 103.

Treatment.—Neosalvarsan, 0.9 gm., four doses a week apart. Three months later neosalvarsan, 0.9 gm., three doses in three weeks. Seventeen months later patient is still markedly spastic in his gait and the physical signs if changed are more pronounced. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; no cells.

These two cases exhibit the capriciousness of results in treating syphilitic diseases of the motor tracts. If inclined to offer a favorable prognosis, one would probably have selected the case with the active exudative reaction in the central nervous system.

This type of case, which is almost an entity in itself, usually offers the most stubborn resistance to treatment, and in that respect differs radically from the usual forms of cerebrospinal syphilis.

CEREBROSPINAL SYPHILIS

The rapidity with which the ordinary types of cerebrospinal syphilis, including meningo-encephalitis and meningomyelitis, respond to salvarsan is very gratifying. Headaches, somatic pains, mild palsies, paresthesias, sluggish motor responses and similar manifestations, as a usual thing, yield in a comparatively short time to treatment with salvarsan. A few examples are more eloquent than much comment. Suffice it to say that similar results could not be accomplished without months of treatment, if at all, under mercurial therapy.

CASE 20.—P. H., man, aged 35, widower. Complaint: Inability to work because of stiffness in the left knee, which disappears to a degree after working it back and forth; lack of prompt response in movements of the left foot; catching of the heel on the ground; difficulty in going up and down stairs; "creeping feeling" in the left hand and elbow. Duration two years, getting worse. Chancre two and one-half years previous.

Examination.—Station normal, no noticeable defect in gait, fine tremor of the hands. Knee and ankle reflexes exaggerated, left more than the right. Babinski on the left, left ankle and patellar clonus, left epigastric and abdominal reflexes diminished right plus, pupils equal and respond promptly to light. Wassermann serum positive; fluid negative; globulin positive; mononuclear cells 26.

Treatment.—Salvarsan, 0.6 gm., three doses about a month apart. Two months after the last treatment patient was working steadily as an inspector of plumbing and had no difficulty or complaint of any description, except a slight stiffness of the left knee on arising. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; no cells.

CASE 21.—N. V., man, aged 30, single. Complaint: Dizziness, intermittent headache, vomiting in the morning, nausea during the day, feeling of uncertainty when on his feet, occasional blurring of vision, pain in the stomach. Duration four months, steadily worse. Chancre six years before.

Examination.—Station and gait normal, occasional general tremor, slight occasional choreiform movement of shoulders and arms, reflexes sluggish; on reinforcement the right knee-reflex is greater than the left; right ankle-jerk present, left absent; right pupil reacts to light; old scar on left cornea due to trauma; vision of right eye normal. Wassermann serum positive; cerebrospinal fluid positive; globulin positive; mononuclear cells 915.

Treatment.—Salvarsan, 0.6 gm., three doses a week apart. One month after last injection his symptoms had entirely disappeared. Wassermann serum positive; globulin negative; cells 30.

He then received weekly injections of 10 minims of salicylate of mercury intramuscularly and after two months was still quite well. Wassermann serum negative; cerebrospinal fluid negative; globulin negative; cells 13. The tremor and the jerky movements have disappeared. Reflexes remain the same.

CASE 22.—W. K., man, aged 26, single. Complaint: Headache; insomnia; twitching of the left side of the mouth, left shoulder and left side of the body; occasional vomiting; completely unable to speak four days ago. Duration three months; progressive. Chancre four months ago.

Examination.—Very slight paresis of right facial nerve, reflexes all present and equal, pupils equal, not quite round, respond promptly to light and in accommodation; station, gait and remainder of physical examination normal.

Mental examination showed marked defects in orientation, memory and attention. Speech somewhat indistinct. Wassermann serum positive; cerebrospinal fluid positive; globulin positive; mononuclear cells 533, polynuclear cells 13.

Treatment.—Neosalvarsan, 0.9 gm., five doses within three weeks. Two months later neosalvarsan, 0.9 gm., two doses three days apart. At the end of that time, ten weeks after the initial examination, no physical abnormality and his mentality has cleared entirely. No speech disorder. Wassermann serum negative; cerebrospinal fluid negative; globulin positive; mononuclear cells 16.

SYPHILITIC MASS FORMATION

Gummata of the brain, cord or meninges are much less common than was formerly supposed. Modern laboratory and therapeutic methods have disclosed the fact that conditions which would formerly, doubtless, have been diagnosed as gumma, must come under the head of cerebrospinal syphilis with a pronounced cellular exudate. This may take the form of a meningoencephalitis or meningomyelitis giving rise to localized symptoms. The rarity of cases in which a diagnosis of gumma in the central nervous system is beyond the pale of dispute makes our experience with salvarsan in their treatment too inconsiderable to be of value in drawing conclusions.

NEURASTHENIC TYPE

There is still another class of syphilitic cases in which the patients show no gross lesion of the nervous system or other viscera, but complain of vague inconstant neurasthenic symptoms which are often called functional.

Many such, beyond doubt, have been treated as functional or neurasthenic even by the ablest hands. In such cases, when there is no knowledge of infection, one is justified in making a therapeutic test on the evidence furnished by a Wassermann reaction repeatedly positive. These cases are rather more frequent than one would suspect, and after observing the relief

which comes to the patients after their blood has been sterilized by salvarsan, one regrets that not all neurasthenics can be so definitely and promptly cured.

INHERITED SYPHILITIC NERVOUS DISEASE

We have yet to appreciate fully the ultimate effects of syphilis on the offspring. Doubtless a considerable percentage of the hosts of mentally backward children have had their central nervous systems impaired *in utero* by the vicious toxins of the *Spirochaeta pallida*. We have under treatment a number of such children exhibiting positive Wassermann reactions, but the time is not yet ripe for an expression of opinion as to the value of therapy.

Another dreadful manifestation of syphilis in the parent is epilepsy in the child. By this is not meant the jacksonian movements which may characterize cerebrospinal syphilis in the exudative stage, but generalized convulsions in a child whose cerebrospinal fluid is normal, but whose blood and that of the mother returns a positive Wassermann. Such cases are comparatively rare, and it is very difficult to make the Wassermann reaction negative. Under salvarsan treatment the number of attacks becomes greatly diminished and in some instances ceases altogether.

GENERAL PARESIS

The tendency of the *Spirochaeta pallida* to lodge in hordes in the non-vascular regions of the cerebral cortex does not augur particularly well for the treatment of general paresis. It is not surprising, then, that the percentage of cures and even cases of arrested progress is very small. Not infrequently a case of paresis will show improvement under salvarsan treatment for a greater or less period, but eventually exhibit progressive deterioration. In this condition the Wassermann reaction in the serum and spinal fluid is extremely resistant and in only a comparatively few cases have we been able to influence it permanently. We can but devoutly hope that the method of subdural salvarsan therapy employed by Swift and Ellis[7] may be a boon to the general paretic. But inasmuch as it has been demonstrated by Kramer[8] that the subdural space around the cerebral cortex is not continuous with that below the tentorium cerebelli and around the spinal cord, any fluid introduced into the subdural space around the cord will not arrive at the cerebral cortex except by way of the central canal of the cord and the ventricle, or after being taken up by the general vascular system. The outlook is therefore not encouraging. The report of a case in which the deteriorating process was arrested may prove interesting:

TABLE 3.—EFFECT OF TREATMENT IN CASE 23 CHRONOLOGICALLY CONSIDERED

Date	Serum Wassermann	Fluid Wassermann	Globulin Excess	Mononuclear Cells	Salvarsan, Gm.
4/19/12...	+	+	+	27	0.3
5/ 9/12	..	..	..	..	0.3
5/11/12	..	..	..	..	0.3
5/14/12	..	..	..	..	0.3
5/31/12	+	+	+	19	0.6
6/ 5/12	..	..	..	..	0.3
6/11/12	..	..	..	..	0.6
7/12/12	—	+	+	3	0.6
7/18/12	..	..	..	..	0.6
7/25/12	..	..	..	..	0.6
7/27/12	+	+	+	10	...
12/27/12	+	+	—	13	...
1/ 7/13	—	—	—	5	...
2/28/13	+	+	+	8	...
6/10/13	—	+	—	13	0.6
12/11/13	+	+	+	5	0.6
12/19/13	..	..	..	..	0.6
1/ 9/14	+	—	—	6	0.6
1/14/14	+	..	..	..	...

CASE 23.—W. M., man, aged 31, single. Complaint (by his mother): Memory failing; low-spirited, irritable; unable to remain at one task; shaking of the hands; speaks so indistinctly that he can with difficulty be understood. Patient states that he talks as well as he ever did and "feels fine." Duration six weeks; progressive. Chancre seven years before with rash and sore throat.

Examination.—Station secure, gait hesitating; marked tremor of the lips, tongue and hands; no hypotonus, slight incoordination; absent knee- and ankle-jerks; plantar flexion, plus abdominal, epigastric and cremasteric reflexes; unequal pupils, rigid to light; tremulous, hesitating speech; sits alone in a depressed attitude; when he is addressed smiles blandly and says he "feels fine." When aroused ascends into a euphoric state; insight fair, memory, orientation and attention good. The treatment and its effect on the Wassermann reaction are given in Table 3.

To-day he is a pleasant, agreeable, rather jovial person, with good sense of humor and of normal conduct. He is a constant reader and relates the details of a story which he has read. His memory and insight are excellent. His attention is good but in the midst of a complexity of duties he becomes easily excited. Gaged by the Binet-Simon tests his mental age is 12 years. His tremors have disappeared and his speech, though slightly hesitating, is clear and distinct. Pupils and reflexes remain unchanged. Although he has not attempted to resume his work as a stenographer, he is industrious about the care of his house and grounds.

From Table 4 is evident the high resistance of the Wassermann reaction both in the serum and in the cerebrospinal fluid in the majority of cases of general paresis.

THE PROVOCATIVE DOSE

Certain persons seem to arrive at such a state of tolerance for the syphilitic parasite that the tissues no longer give chemical evidence of active resistance to the invader. Salvarsan is often of value in arousing the latent capabilities of the body-cells and may be employed to advantage in the doubtful cases as a diagnostic measure. Untreated cases with suspicious symptoms, which are luetic, presenting a negative Wassermann reaction, may have this changed to a positive reaction by a single small injection of salvarsan. The blood should be drawn from one to three days after the injection.

PLAN OF THERAPY

While salvarsan has proved our most rapid and most efficient agent in treating syphilitic nervous disease, the use of mercury, preferably intramuscularly, in the interval between doses of salvarsan, has proved highly desirable. The salicylate in a purified petroleum oil suspension has been chiefly employed by us.

It is probable that the intermittent treatment will prove advantageous. By this is meant a succession of periods of treatment and periods of rest, each covering a number of weeks. The spirochete is thus not rendered immune or less sensitive to the specific therapy as may occur when treatment is continuous. The great drawback to this plan is losing sight of the patient, whose interest may wane.

In our enthusiasm in attempting to render the Wassermann reaction negative, we must not forget that

7. Swift and Ellis: New York Med. Jour., 1912, xcvi, 53.
8. Kramer: New York Med. Jour., March 16, 1912.

we are treating the patient, not the condition of his serum. Besides the directly antisyphilitic remedies, all adjuvant measures possible must be employed, including systematic exercise in the open air, Fränkel exercises when necessary, tonic baths, various forms of electricity, massage, the cautery when indicated and a simple nutritive diet. But in observing the progress of therapy and the decadence of the syphilitic process, the Wassermann reaction and the cell count are our most enlightening guides, and without them we are in the dark. Improvement in symptoms nearly always follows *pari passu* with improvement in this.

From a continuous study and review of the work of the past four years we submit the following conclusions, which differ in no essential from those expressed in a report by this service on the same subject two years ago.[9]

CONCLUSIONS

1. The treatment of syphilitic nervous diseases without the Wassermann reaction and spinal fluid analysis is guess-work.

2. The nervous system may be the site of attack within a few weeks after the initial lesion appears.

TABLE 4.—HIGH RESISTANCE OF WASSERMANN REACTION IN GENERAL PARESIS

GENERAL PARESIS

No. of Example	Serum, Wassermann	Cerebrospinal Fluid Wassermann	Cerebrospinal Fluid Globulin	Cerebrospinal Fluid No. Cells	Fehl'g's Reduction	Salvarsan, Gm.	No. Doses	Neosalvarsan, Gm.	No. Doses	Serum, Wassermann	Cerebrospinal Fluid Wassermann	Cerebrospinal Fluid Globulin	Cerebrospinal Fluid No. Cells	Fehl'g's Reduction
1	—	+	+	130	+	0.6	8	....	..	—	+	+	3	+
2	+	+	+	15	+	0.6	4	0.9	4	—	—	—	16	+
3	+	+	+	109	+	0.6	1	0.45	1	+	+	+	24	+
						0.3	1							
4	+	+	+	192	+	0.6	2	0.45	5	—	+	+	8	+
5	+	+	+	116	+	0.6	4	....	..	+	+	+	120	+
6	+	+	—	0	+	...	..	0.9	3	+	+	—	0	+
7	+	+	—	27	+	...	..	0.9	3	+	+	—	20	+
8	+	+	+	35	+	...	..	0.9	5	—	+	—	0	+
9	+	+	+	107	+	...	..	0.9	6	+	+	—	48	+
10	+	+	+	151	+	0.6	2	0.9	2	+	+	+	32	+
11	+	+	—	270	+	0.6	4	....	..	+	+	+	146	+
12	+	—	+	121	+	0.6	4	....	..	+	—	+	65	+

CEREBROSPINAL SYPHILIS

1	+	—	+	26	+	0.6	3	....	..	—	—	—	0	+
2	+	+	+	915	+	0.6	5	....	..	+	+	+	15	+
3	+	+	+	91	+	0.6	1	0.45	6	—	+	—	14	+
						0.3	2							
4	+	+	+	548	+	0.6	1	0.9	7	—	—	—	12	+
5	+	+	+	930	+	0.6	8	....	..	—	—	—	26	+

3. The earlier antisyphilitic treatment is instituted in syphilitic nervous diseases, the greater the probability of complete recovery.

4. Salvarsan is the most potent remedy in our armamentarium in the treatment of syphilis of the nervous system.

5. Salvarsan is not all-sufficient.

6. One or two doses are not usually sufficient to effect a cure, but may check the disease for a time.

7. Syphilitic nervous diseases improve most when salvarsan therapy is combined with mercurial treatment and general tonic measures.

8. Therapy should be continued until the serology is negative if possible.

9. The serology should be examined periodically after a negative status has been achieved.

149 East Sixty-Seventh Street.

9. Collins, Joseph, and Armour, Robert G.: The Treatment of Syphilitic Diseases of the Nervous System by Salvarsan, THE JOURNAL A. M. A., June 22, 1912, p. 4918.

CASE OF POISONING BY SCOPOLAMIN (HYOSCIN) HYPOBROMATE

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May 28, 1913, in the forenoon, W. R. P., man, aged 21, consulted an oculist, who discovered that he had no homatropin to use in the examination. Calling by telephone a local drug-store, he ordered some powders, each to contain ½ grain of homatropin. The messenger appeared shortly with an envelope containing the supposed powders of homatropin. The oculist immediately made a solution by dissolving one of the powders in thirty drops of distilled water (a method used by him for obtaining approximately 1 c.c.), omitting to read the label, which was small and inconspicuous. The label read "hyoscin hypobromate, grs. ½." The patient then lay on a couch and 3 drops of the solution were dropped in each eye, so that about 1/10 grain of scopolamin (hyoscin) hypobromate was administered in this way. In a few minutes he complained of dizziness. While he managed to stagger to a chair, he immediately threw himself back on the couch on account of his sensation of dizziness and faintness. His pulse at this time was beating at the rate of 150 a minute, and at times it was too indistinct to be counted. He was actively delirious, having delusions of playing baseball—from his conversation apparently with much interest. He was closely watched and received 1/30 grain of strychnin hypodermically. No other medication was employed. His condition gradually improved, so that by 4:30 o'clock his pulse was reduced to 110 and was stronger. He was then removed to the hospital. He was still delirious and seemed to realize that he was talking irrationally, but said that he was unable to control it. By 7 o'clock his pulse was 86, his respiration 18, his temperature 99.4, and he was practically rational. On the following day, at which time I first saw him, his pulse varied from 60 to 86 and his temperature reached 99.2. No trace of his mental confusion remained. He left the hospital on the third day. While he has worried somewhat about himself since the occurrence, there is no evidence that any permanent injury has resulted from his large dose of scopolamin hypobromate.

Early Specialization.—The Egyptians were right in neglecting the general calling of a physician and of dividing the profession.—Montaigne.

REPORT OF A CASE OF PELLAGRA WITH LATE SKIN LESIONS

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It has been frequently observed that the skin-lesions of pellagra, although having given the disease its name, are by no means necessarily, or even commonly, the first symptoms to appear. It is perhaps less generally known that symptoms referable to other organs may persist for such a long period without the development of the dermatitis that one may be entirely put off the scent if one depends on this symptom alone. I cannot better lay stress on this feature of pellagra than by briefly reporting a case recently seen by me in which the late appearance of the skin-symptoms was no less than tragic.

Mrs. X., a woman of 30, living in a neighboring mountain town, married and the mother of five children, had always been well until shortly after the birth of the last one, a seven-months' child, born July 1, 1913, and living only a few days. The puerperium presented no unusual features and the patient remained well until about a month after delivery. About this time she noted that her strength was not quite up to par, and the appetite, hitherto good, became capricious and soon vanished almost completely. Associated symptoms were an intense nausea, with vomiting, repeated several times daily, and persisting for three or four months. Pain and burning in the stomach were early and distressing symptoms. Following in the wake of these "dyspeptic" symptoms, there appeared a diarrhea, at first mild, but soon attaining considerable proportions. The diarrhea, with movements varying from ten to twenty daily, persisted until March, 1914. The patient, as a result of this drain, became weaker and weaker, y still attempted to keep about and to attend to her household duties. During this period she was seen by several physicians and was treated by them for "stomach-trouble," "intestinal catarrh" and "consumption of the bowels," with but little improvement. About the middle of March, 1914, the patient became more acutely ill, suffering with extreme nervousness, a recurrence of the vomiting, severe burning in the stomach, and a sore mouth and tongue, accompanied with profuse salivation. She was so sick that she was compelled to take to her bed. At the same time there appeared on the backs of the hands and forearms a symmetrical erythema resembling sunburn, which blistered and later scaled. The patient has been in bed continuously since the acute attack.

I saw her for the first time, May 15, 1914. In the course of the two months which she has spent in bed the diarrhea has improved so that she has only two movements daily, the nausea and vomiting have disappeared and the appetite has partly returned. The chief complaints are the burning pain in the feet and the cramps in the calves of the legs, both so severe that she is unable to get much sleep, the loss of which adds greatly to her already exhausted condition. While the sore mouth has improved, the salivation is profuse and the patient is almost continuously wiping the saliva from the lips and chin, which have become excoriated as a result of the constant discharge. On the backs of the hands and forearms is a symmetrical, rather sharply defined dermatitis, with scaling still going on. Both elbows are ichthyotic in their roughness. Emaciation is extreme; the eyeballs are sunken in their sockets; the face is drawn, the expression set and anxious, while speech is slow and attended with much difficulty on account of both the salivation and the mental and physical exhaustion. Sleeplessness, made worse by pains in the legs and feet, has intensified the prostration to such a degree that the patient is unable to sit up in bed without fainting. Mental symptoms, such as loss of memory and "flightiness," are present, but the patient makes the attempt to appear cheerful in spite of the feeling of apprehension which she is unable to throw off.

The main features of the case, then, are as follows: Here is a woman evidently suffering with pellagra, confined to bed for over two months, and requiring the constant attendance of a nurse, so extreme is the prostration. And yet for over seven months prior to the advent of the dermatitis and other frankly pellagrous symptoms, there was nothing in her history which even remotely suggested pellagra to the physicians in charge of the case, so that the patient was allowed to be about and had greatly exhausted her strength before pellagra showed itself in its true colors. The lesson to be learned from this case is that the physician must not wait for the dermatitis before suspecting, at least, the existence of pellagra; and an evident corollary is that in pellagrous areas a long-continued attack of "stomach and bowel trouble" must be regarded as cause for alarm. It is hoped that this brief case-report will bring out the point which I wish to emphasize, namely, that pellagra may exist for a long period—months and possibly years—before the characteristic dermatitis makes its appearance. In this instance it was probably the pregnant state which awoke a latent pellagra, and the premature birth was in all probability the result of pellagrous infection.

Therapeutics

TETANUS

Statistics are constantly impressing us with the facts: (1) that tetanus is preventable; (2) that frequently it can be stopped after it has developed; (3) that it may be cured after it has become well established. Consequently, it should never be considered absolutely incurable.

PREVENTIVE TREATMENT

The most successful preventive treatment and practically the only successful one after the disease has developed is by tetanus antitoxin. As a preventive, this antitoxin ranks even ahead of diphtheria antitoxin; therapeutically, it is far inferior, because part of the toxin produced by the tetanus bacilli forms a combination with the nerve-cells of the spinal cord. The greater portion of the toxin seems to circulate in the blood, but a small part is absorbed by way of the lymph-vessels and passes to the spinal cord by means of the nerve trunks.

One of the greatest dangers from this terrible infection is that the local lesion may not show signs of disturbance when the central nervous system suddenly gives indications of poisoning. The kinds of wounds likely to contain the tetanus bacillus, however, are positively known. These are: all wounds that may contain dirt contaminated by manure, such as that from streets, stables or barns and even fields; wounds by firecrackers; by gunshots, especially with blank cartridges; by crushing, in machinery or otherwise. The feet and hands are especially prone to be infected with tetanus germs. Street injuries that are not deep or perforating, but grinding and lacerating, are very likely to cause tetanus infection. Also, it has been stated that tetanus bacilli may be harbored in an old injury, yet cause no symptoms until some other injury or general disturbance of the body has caused the normal protection against infection to be broken down; then toxins from the bacilli may be absorbed and tetanic symptoms develop. This would account for some otherwise apparently unaccountable developments of tetanus.

DRESSING THE WOUND

The corollary to the preceding statement is that in every case of injury, whenever the wound may have been contaminated by street dirt or by objects that have been exposed to street or barn dust, first, all

foreign matter should be removed from the wound, even if to do so it becomes necessary to cut down on a penetrating wound under anesthesia; secondly, not the open wound alone, but the surrounding tissues as well should be painted with tincture of iodin, then the wound should be dressed with some antiseptic dressing, of which a strong alcohol wet dressing is, perhaps, as good as any; thirdly, the patient should be given immediately an injection of 1,500 units of tetanus antitoxin.

Various antiseptic soaps, washes and solutions have been and may be used in cleansing the wound and dressing the injured part. It should be remembered that, if the tincture of iodin is used, its germicidal action is greater the drier the parts are and the less they have been bathed with solutions.

It should be emphasized that statistics, from both Europe and the United States, compiled from repeated observations by careful surgeons and clinicians, indicate that it is almost inexcusable not to give a patient, who has suffered one of the above-mentioned injuries, or who has been known to have had an injured part contaminated with a possibly infected dirt, the preventive dose of tetanus antitoxin.

Antitetanic powders have been prepared with antiseptics, and although, experimentally, their use has been successful in preventing the development or absorption of tetanus toxins, still it has not been shown that the results were not accidentally successful because of the strong antiseptic that was combined with the antitoxin powder. It might, however, be well to apply antitetanic serum to the open wound at the same time that the preventive subcutaneous injection is given.

According to investigations, the immunity caused by the antitetanic injection does not seem to last more than from two to three weeks, but this is generally long enough to prevent the development of the infection from any particular injury.

ANAPHYLACTIC SYMPTOMS

The usual reaction which takes place from the injection of any horse-serum may occur, that is, anaphylactic symptoms, but these are rarely severe, and are shown mostly by slightly increased temperature, and light urticarial eruptions with some itching. When a number of injections must be made in the treatment of tetanus, there is, of course, sooner or later, greater liability of serum reaction. In some instances it has been found that hypodermatic injections of atropin sulphate have prevented some of the symptoms.[1] As atropin alone may cause, through irritation of the skin, a scarlatiniform eruption, it seems rather surprising to find atropin successful in preventing symptoms of anaphylaxis. It should be remembered that, in hay-fever or asthmatic patients, as serious poisoning may occur with this horse-serum as in the use of diphtheria antitoxin. Therefore, before using antitetanic serum as a preventive of the disease, it should be carefully ascertained whether or not the patient is susceptible to horse emanations.

If the first symptoms of tetanus are in evidence, that is, if the disease is about to develop, or has developed, it may be aborted by the immediate injection of from 5,000 to 10,000 units of antitetanic serum, best administered intravenously. It may also be well, within a few hours, to give in addition 5,000 units subcutaneously. If the symptoms are well developed, or the patient shows severe poisoning, from 10,000 to 20,000 units should be immediately given intravenously, and in ten or twelve hours 3,000 to 5,000 units subcutaneously, provided the symptoms have not markedly ameliorated. In twenty-four hours the same subcutaneous dose may be repeated. A more effective treatment, however, is gently to inject 5,000 units into the spinal canal, if the intravenous injection has not ameliorated the symptoms in a few hours. This seems to be the most effective means of combating the action of the toxins on the spinal nerve-cells. In fact, it has been proved that the toxin in these nerve-cells cannot well be combated by antitoxin in the blood-stream, but that it can be when the antitoxin is injected into the spinal canal.[2]

Even if the symptoms have markedly ameliorated, if any signs such as muscle stiffening, show that the disease is continuing, a smaller injection may be given subcutaneously once or twice in twenty-four hours for several days.

DOSAGE OF ANTITOXIN

The amount of the antitoxin that may be used without causing harmful symptoms seems to be without any narrow limit; several thousand units may be administered every few hours, if it seems advisable, and 20,000 to 30,000 units intravenously. Many thousand units may be given during the course of the disease with only good results.

Finally, each physician and surgeon should seriously consider the advisability either of using a prophylactic dose of tetanus antitoxin serum in every injury of the character described; or, if his patient, or the patient's family refuses to allow such an injection to be given, of securing a signed release from responsibility or blame should tetanus later develop.

1. Berghausen, Oscar, and Howard, Charles E.: The Treatment of Wounds with Reference to Tetanus Prophylaxis, THE JOURNAL A. M. A., Jan. 13, 1912, p. 104.

2. See The Serum Treatment of Tetanus, editorial, THE JOURNAL A. M. A., April 11, 1914, p. 1174.

Carious Teeth.—Statistics of the London County Council show percentages of carious teeth among schoolchildren are as follows: Entrants (that is, very young children), boys 10.3, girls 10.1; children between 8 and 9, boys 17, girls 16.5; between 11 and 12, boys 12.9, girls 11.8. The increase during what may be described middle school age is ascribed to the fact that the milk-teeth are then being changed for the permanent. An attempt is made to classify the percentages of bad teeth according to social condition. About 39 per cent. of the children from well-to-do homes have defective teeth, as against 27 per cent. from very poor homes. This is accounted for by the fact that the coarser food eaten by the poorer children gives their teeth more work, and hence keeps them clean and strong. It is also suggested that the poor are able to give their children fewer sweets, and only those of the cheap or boiled-sugar variety. These sweets break up clean in the mouth, whereas the caramels and chocolates eaten by better-off boys and girls tend to cling round the teeth and form a nidus of fermentation. Writing on this subject, Dr. Sims Wallace, late dental surgeon to the London Hospital, states that there are in this country about 21,000,000 teeth in a state of ruin through eating sweets, and urges the adoption of a diet containing farinaceous food in a form which will stimulate mastication, as brown bread, and also the eating of fresh fruit at the conclusion of a meal. By means of the fruit the teeth are cleansed. The best fruit for this purpose is probably the apple, which, if eaten at the end of a meal, leaves the mouth fresh and physiologically clean.

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THE TRANSMISSION OF TYPHUS FEVER

In September, 1909, Nicolle, Comte and Conseil[1] reported the successful transmission of typhus fever from one monkey to two others by means of the bite of the body-louse (*Pediculus vestimenti*). In their report they showed that body-lice that had fed on an infected monkey were able to convey typhus fever some time between the first and the seventh day thereafter.

Independently of Nicolle and his co-workers, Anderson and Goldberger,[2] in their studies on typhus fever in Mexico in November, 1909, reported two attempts to transmit Mexican typhus from man to the monkey by means of the bite of the body-louse. In one of their experiments the monkey showed a slight elevation of temperature eight days after the last exposure to the bites of the infected lice, but they stated that circumstances made it impossible to test the immunity of this animal. In view of later studies by them and by others, they concluded that it was very probable that the elevation of temperature was due to infection with typhus.

Ricketts and Wilder,[3] also working on the Mexican typhus, reported in 1910 that they were able to transmit the virus of typhus fever by means of the bite of the body-louse from man to monkey and from monkey to monkey. They also reported the successful transmission of the typhus virus to the monkey by introducing into scarifications of the skin the abdominal contents of infected lice. They stated that, as a rule, in their louse experiments, the monkeys had no very significant temperature reaction and that proof of infection was dependent on immunity tests with virulent blood.

In 1911, Nicolle and Conseil,[4] continuing their work of two years previously, reported further successful experiments on the transmission of typhus to the monkey by means of the bite of infected body-lice.

Subsequently, in 1912, Anderson and Goldberger,[5] continuing their work on typhus in both the United States and Mexico, reported the successful transmission of both the Mexican and New York typhus by means of infected lice. They also reported the first evidence incriminating the head-louse (*Pediculus capitis*) as a possible agent in the transmission of typhus.

All the work above referred to on the transmission of typhus fever by means of the louse has been on the transmission of the disease to the monkey by means of body-lice that had fed either on infected monkeys or on human beings, and until recently no exact experiments had been reported on the transmission of the disease from man to man by means of the bite of infected lice. There are a number of instances in the literature which strongly suggest this possibility, but the evidence has not been conclusive. Sergent, Foley and Vialatte,[6] however, have recently reported the successful transmission of typhus to man and to the monkey by means of the body-louse and possibly also by means of the eggs from infected lice.

In one of their experiments about two hundred infected body-lice were allowed to feed daily on the authors and individuals who volunteered for this service. On the fourteenth day after the beginning of the feeding one of the subjects developed typhus fever. Lice taken from the individual, after being made into an emulsion, were used to inoculate a monkey which, after four days' incubation, developed typhus. Blood was drawn from this animal and used for the inoculation of a second monkey which, after an incubation period of seven days, developed typhus fever.

Sergent and his co-workers conclude that the mere bite of infected adult lice is sufficient to transmit typhus fever to man and that lice taken from a person so infected are infective for the monkey, by either subcutaneous or intraperitoneal inoculation of an emulsion of the ground-up lice. They maintain also that the inoculation of the eggs from infected lice will produce typhus fever when inoculated into man by slight scarification of the skin.

These experiments of Sergent seem conclusively to settle, by means of experiments on man, the rôle of the body-louse in the transmission of typhus fever. It is a matter of sincere congratulation that much of the recent advance in our knowledge of this once dreaded disease have been due to the work of American investigators, although the toll through the loss of life of two of the investigators — Ricketts and Conneffe — has been severe.

1. Nicolle, Charles; Comte, C., and Conseil, E.: Transmission expérimentale du typhus exanthématique par le pou du corps, Compt. rend. Acad. d. sc., Sept. 6, 1909, p. 486.
2. Anderson, John F., and Goldberger, Joseph: On the Infectivity of Tabardillo or Mexican Typhus for Monkeys and Studies on Its Mode of Transmission, Pub. Health Rep., Feb. 18, 1910, p. 177.
3. Ricketts, Howard T., and Wilder, Russell M.: The Transmission of the Typhus Fever of Mexico (Tabardillo) by Means of the Louse (Pediculus vestimenti), THE JOURNAL A. M. A., April 16, 1910, p. 1304.
4. Nicolle, Charles, and Conseil, E.: Etiologie du typhus exanthématique, Ann. de l'Inst. Pasteur, XXV, p. 68.
5. Goldberger, Joseph, and Anderson, John F.: The Transmission of Typhus Fever, with Especial Reference to Transmission by the Head-Louse (Pediculus Capitis), Pub. Health Rep., March 1, 1912.
6. Sergent, E.; Foley, H., and Vialatte, C.: Transmission à l'homme et au singe du typhus exanthématique par les poux d'un malade atteint de fièvre récurrente et par des lentes et poux issus des précédents, Compt. rend. Acad. d. sc., March 30, 1914, p. 964.

COLLEGIATE ATHLETIC SPORTS

One of the numerous criticisms aimed at college athletics, as practiced among most student bodies at present, relates to their failure to take into account the subsequent needs of the persons involved. To an unbiased observer it cannot fail to appear incongruous that a student should devote months or years to a peculiar sort of physical training, avowedly intended to improve his body and promote his physical well-being, only to find himself, on leaving the university, without any form of exercise or healthful recreation that can be followed during after-college life. Certainly the football hero or the member of the winning crew who has developed himself by special efforts into a muscular giant will find little chance to continue his training after graduation. The reaction from the physical stress of severe competitive intercollegiate athletics to the physical passivity of a sedentary occupation in the counting-house or the law chambers is one of the real hardships to which young men are yearly being inevitably consigned by the inconsistent and improper application in American colleges of a pernicious system of athletic rivalry that ought to be confined to professional athletes.

Wherein competitive sports, in their present abuse, fail to play the wholesome rôle that systematic bodily exercise and legitimate athletic performance should take in the life of young people has been discussed in THE JOURNAL.[1] In several respects our contentions are in accord with the findings and suggestions of a committee appointed by the National Collegiate Athletic Association to report on the encouragement of intracollegiate and recreative sports. As an outgrowth of the feeling that the present methods do not reach the mass of our students, and do not provide them with practical means for exercise and recreation in after-life, Drs. H. Shindle Wingert of the Ohio State University, Raymond G. Clapp of the University of Nebraska, and Charles E. Hammett of Northwestern University have made an investigation of the practices prevailing in one hundred and fifty collegiate institutions representative of all sizes, locations and degrees of athletic prominence. The undue prominence of the intercollegiate, that is, strenuously competitive, type of games is plainly emphasized. Among the 111,000 students of the institutions under consideration, 18,000 are associated with varsity teams as members or substitutes. From the vagueness of some reports, a definite statement cannot be made as to the number who take part in intramural games, but it appears to be about three times as many as in intercollegiate games. The money expended on intercollegiate sports in 150 colleges is reported as $1,090,000. In some cases, the amount reported is said to include expenditures also for intramural sports, the proportion not being given. This fact reduces somewhat the expenditure above indicated for intercollegiate sports, and makes it impossible to give the exact amount spent for intracollegiate activities. A reasonable inference, however, from the facts submitted would be that not one-tenth as much is spent for intramural as for intercollegiate games.

Despite the fact that the actual numbers participating in intracollegiate sports is about three times greater than those of the more conspicuous group of selected athletes, it is very clear to one who studies the returns from the colleges that only a small fraction of the money spent on intercollegiate games is used to promote general student athletic activities. Surely if the money of the athletic treasury is to be expended for the physical welfare of the general student body rather than for the staging of a few exciting contests which arouse partisan enthusiasm instead of promoting the physique of the great majority of those concerned, the contribution to the athletic "show" seems unduly prominent. It appears that on intercollegiate sports the large institutions spend the most money per athlete (about $60), but the least per student (about $8), the figures for the medium-sized institutions and the small institutions being respectively $50 and $40 per athlete, and $12 and $13 per student.

After making due allowance for the necessarily approximate character of the reports, the committee is convinced that not more than 50 per cent. of the students in college engage in any form of systematic or organized exercise. It feels, moreover, though it has no way of determining to what extent, that 50 per cent. is decidedly too high a proportion. The committee calls attention to the necessarily unsystematic and sporadic character of the exercises as participated in by the non-university students. Exercise in any form can be of little value unless taken systematically and regularly. Out of 143 colleges, 53, or 37 per cent., are doing nothing to foster and encourage the types of physical exercise and healthful recreation that the student is likely to use in after-college life; 53 per cent. try to create a love of sport by using different games, such as baseball, handball, volley ball, tennis and golf; 21 per cent. give corrective exercises; 14 per cent. give hygienic lectures; 5 per cent. require swimming; 5 per cent. have "hikes," and two colleges teach dancing.

The experts of the National Collegiate Athletic Association believe that intracollegiate sport and recreation should be planned with the constant purpose in view of usefulness in after-life. They are inclined to believe that the conditions revealed by their investigations are due primarily to the lack of appreciation by college authorities and faculties of the vital need of systematic organized instruction in intracollegiate and recreational sports and hygiene. We are impelled, however, to believe that it is not so much the indiffer-

1. See editorials, THE JOURNAL A. M. A., Athletic Sports in Relation to Health, March 21, 1913, p. 936; Athletic Sports versus Competitive Athletics, April 4, 1914, p. 1094; The Hygiene of Athletic Sports—Rowing, April 11, 1913, p. 1172.

ence of collegiate authorities as the dominance of competitive intercollegiate athletics which is responsible for the relative indifference to physical exercise in the very communities in which its value is being taught by lectures and text-books. The glorification of an overtrained few means their sacrifice in many instances and the diversion of interest from more wholesome but less spectacular sports. As the committee referred to has concluded, the student should be furnished with such ideas of rational exercise and hygiene as will enable him to adapt his habits of exercise and modes of living to changing conditions in after-life; that is, he should be trained to think and act of his own initiative in these matters. Some games and exercises can be participated in as intracollegiate sports and can be continued in after-life. Tennis appeals to great numbers in everyday life, but only 65 per cent. of the colleges afford the comparatively inexpensive equipment of courts. Baseball requires little equipment; every fairly well-equipped gymnasium can have a swimming pool and each student should be taught to swim. Social dancing and bowling are especially fitted to the opportunities of after-life. Fencing, wrestling, boxing, Indian club exercises and calisthenics, if made interesting and rightly taught, are of substantial value after college; walking and "hiking" can always be indulged in. A period of reconstruction in the whole domain of collegiate athletics is approaching.

THE HEMOLYMPH-GLANDS

For many years various glandular structures have been classed together as lymphatic tissues, in the belief that they are essentially and fundamentally related to each other. The spleen, for example, in many respects resembles a lymphatic gland. Just as in the latter the cellular elements of the tissues are bathed by the lymph which flows through the gland, so in the spleen the blood is poured out into the interstices of the tissue. Thus the malpighian bodies of the spleen are believed to correspond to the follicles of lymph-glands; and it is frequently stated that after splenectomy a compensatory hyperplasia of the other lymph-glands usually occurs. Spleen and lymph-glands alike are assumed to be concerned in the resistance to infection, in the processes of hemolysis and phagocytosis, and in the pathologic hyperplasias and metaplasias.

The name "hemolymph-glands" has been given to another group of related structures about which there has been much difference of opinion. Found in the thoracic and abdominal aggregations of glandular lymphatic structures, they are commonly believed to be specialized to deal with red cells as well as lymphocytes originating in the more typical lymph-glands. In the hemolymph-nodes as ordinarily described, there are found, besides the ordinary lymph follicles, lymph sinuses and blood-vessels, a varying number of sinuses filled with red corpuscles, and Cabot, for example, has stated that in these glands the destruction of red corpuscles, especially in pathologic conditions such as infection and toxemia, is considerable. Whether or not they also take part under pathologic conditions in red cell formation has been disputed.

The general pathology of the hemolymph-nodes has hitherto been regarded as essentially the same as that of the lymphatic glands. Inflammation, syphilis, tuberculosis, the various retrograde changes, and secondary neoplasms are all said to be found in the nodes containing blood-sinuses. Little has been ascertained concerning their special pathology, presumably because of the assumption that no hard and fast line can be drawn between spleen, hemolymph-glands and ordinary lymph-glands. Almost a continuous series of transitional structures has been described, and among them the so-called "accessory spleens" have been depicted as a splenic reticulum so widened as to approximate the blood-sinus of a hemolymph-gland and with the malpighian bodies so diffuse as to resemble the lymphoid portion of the blood-lymph glands. The apparent impossibility of distinguishing in every case between these supposedly interrelated structures has been confirmed through the assertion that hemolymph-nodes can be produced experimentally through the stage of lymph-glands and even back again. The procedures undertaken to secure these changes or the formation of presumably compensatory accessory glands of the hemal type have included the removal of the spleen and injections of toxic substances.

Directly opposed to the foregoing points of view is the contention of a smaller number of investigators, that the true hemolymph-nodes have no connection whatever with the lymphatic system.[1] The solution of the problem is not easy, inasmuch as the lymphatic glands in general—even the peripheral accumulations—are subject to pronounced changes in color and consistency under relatively slight provocation. The histologic examinations to determine assumed changes must be painstaking and the preliminary conditions in some way controlled. In view of the conflicting testimony, Dr. Arthur W. Meyer[2] of the division of anatomy of the Department of Medicine at Leland Stanford, Jr., University has resumed the investigation of the hemal nodes, splenectomy being performed in most cases to provoke the presumed changes. It happens at times that color changes occur in the true lymph-nodes when they become hemorrhagic; but in no instance were hemolymph-nodes formed. As Meyer remarks, changes in lymph-nodes following various influences, of course, have long been recog-

1. Weidenreich, F.: Ueber Blutlymphdrüsen, Anat. Anz., 1901, xx.
2. Meyer, A. W.: The Supposed Experimental Production of Hemolymph-Nodes and Accessory Spleens, V. Studies on Hemal Nodes, Jour. Exper. Zoology, 1914, xvi, 241.

nized; but the nodes remain lymph-nodes and are not converted into hemal nodes having no connection with the lymphatic system.

If we accept Meyer's conclusions on this subject it is impossible at present to say to what extent the pathologic changes hitherto ascribed to the hemolymph-nodes in disease apply to the glands of the true hemal type rather than to altered lymph-nodes. One can find descriptions of morphologic deviations of the glands of the prevertebral region in cases of pernicious anemia, posthemorrhagic anemia, Banti's disease, leukemia, pseudomelanosis, and in all infections characterized by a general intoxication. But if the hemal nodes are really something actually distinct from the supposedly related lymph-glands, the exact nature of their function and pathology must be ascertained anew.

ACTIVE PRINCIPLES OF ERGOT

Ergot is a parasitic fungus (*Claviceps purpurea*) which grows on rye (*Secale cornutum* or *cereale*) and occasionally on other kinds of grains, more rarely on other plants. Its occurrence on one of the bread-cereal grains explains why it has so frequently given rise to wide-spread epidemics of poisoning and thus acquired a considerable prominence in toxicology. Ergotism due to eating foods prepared from affected rye was very common in the earlier days. It is quite possible for 6 per cent. or more of the fungus to find its way into bread; and less than 1 per cent. is said to be sufficient to produce intoxication. Despite the fact that ergot can readily be recognized, wholesale poisoning from it has been reported even in comparatively recent years. Conspicuous are the epidemics in Nanterre, France, in 1894, in Hungary in 1908, and a long series of calamities in Russia. It may be added that in these cases two different types of symptoms appear with varying frequency, namely, the gangrenous and the convulsive forms, suggesting unlike causative agents.

Aside from these toxicologic features, ergot has long been prominent in therapeutics; and the use of pharmaceutical preparations of it, in particular the fluidextract of ergot, is familiar everywhere. In view of these twofold sources of interest it is not surprising that the composition of ergot should have attracted consideration in the early days of modern chemistry. Though ergot was studied by a number of chemists in the eighteenth century and the earlier part of the nineteenth, the first careful investigation was made by Wiggers in 1831, at a time when the long controversy as to the therapeutic utility of the drug was drawing to a close.[1] Since then there has been a more or less continuous attempt on the part of numerous chemical investigators to unravel the intricacies of a crude product which includes a mixture of stable and unstable compounds of widely unlike character. The number of "active principles" which have been reputed to be present in and isolated from ergot is almost legion. Resins, alkaloids, organic acids and glucosids have been reported. How bewildering the pharmacology of ergot had become a few years ago is indicated by the names of some of the supposed active agents which are still found in all but the most up-to-date literature: ecbolin, ergotin, picrosclerotin, sclerocrystallin, spacelinic acid, cornutin, crysotoxin, secalintoxin, sphacelotoxin, hydro-ergotinin, clavin, ergotinin and ergotoxin.

It is not surprising that in view of this confusion in the domain of chemical analysis on the one hand, and of pharmacologic symptoms and activity on the other, it has been very difficult to decide on a suitable method of assay for pharmaceutical preparations. Nor have matters been helped by the statements that ergot more than a year old is unfit for therapeutic use. Despite the extreme perplexities of the situation, investigations carried out during the past few years have actually resulted in the isolation from ergot of several active principles of undisputed identity and chemical purity, the presence of which adequately accounts for those actions of the drug that have been regarded as especially related to its therapeutic effects, each type of action having been advocated by one observer or another as a basis for its physiologic standardization.

First of these principles is the alkaloid ergotoxin, $C_{35}H_{41}O_6N_5$. Of the physiologic effects described as characteristic of ergot, the ergotoxin carefully investigated by Barger and Dale produces, pharmacologically, in very small dosage, ataxia, dyspnea, salivation, gastro-intestinal irritation, gangrene and the stimulant effect on plain muscular organs — in particular the arteries and the uterus — as well as the subsequent selective sympathetic motor paralysis caused by many ergot preparations. It is apparent from the studies of these investigators at the Wellcome Physiological Research Laboratories in London that many of the earlier "active principles" enumerated above are cruder mixtures of this ergotoxin with inactive substances from the ergot or impurities with a small admixture of the alkaloid.

Barger and Dale pointed out several years ago that the action of pharmacopeial extracts appears too great to be accounted for by the small amount of ergotoxin which they contain, and it seems likely that some other active principle is present in them. It is not difficult to find inactive constituents, such as amino-acids, which are doubtless derived from the metabolism of the fungus. From these, in turn, can be produced products of the activity of micro-organisms among which the amins are a characteristic type. Thus Barger and Dale have discovered hydroxyphenylethylamin, derived

1. A summary of this earlier history will be found in the paper by Barger, G., and Dale, H. H.: Ergotoxine and Some Other Constituents of Ergot, Biochem. Jour., 1907, ii, 240.

from tyrosin, and beta-iminazolylethylamin, derived from histidin by decarboxylation. The former exhibits an energetic vasoconstrictor effect and the latter, even when exhibited in minute doses, calls forth vigorous contractions of the uterus. These are, of course, phenomena characteristic of ergot itself.

In addition to those of apparent therapeutic importance, certain other effects have been appreciated. Conspicuous among these is an inhibitor effect on the heart, suggesting an intense, though curiously evanescent muscarin-like action. Finding that the prominence of this effect in the action of different specimens of ergot ran closely parallel with their stimulant action on intestinal muscle, and that both were abolished by atropin, Dr. Dale was led to suspect the presence in ergot of a principle producing both of these responses. This has just been discovered by Ewins[2] to be acetylcholin, a derivative of cholin, which Hunt and de Taveau long ago described as one of the most active bases. There is now no question but that it occurs in the original ergot grains and is not derived from changes incident to the preparation of extracts. Another active principle of ergot, recognizable by its inhibitor action on the heart and its stimulant action on intestinal muscle, has thus been identified. Only the trained organic chemist can adequately appreciate the difficulties and laborious undertakings which have been crowned with this splendid success of the isolation of acetylcholin from a natural product.

THE ETHICS OF EXPERT TESTIMONY

We observe with some concern the tendency on the part of certain men of excellent scientific training and good professional position to forget their responsibility to the public. Utter confusion and misapprehension of scientific aims are likely to be the result in many minds if more discretion is not displayed by some experts in their choice of occasion on which to utilize their technical knowledge in a court of law. There is first of all the effect which the willingness to appear frequently in court is likely to have on the professional reputation of the witness himself. The expert who allows himself to form the habit of accepting any and all offers to "testify" will surely awake some day to find himself involved in a maze of contradictions which will hardly be helpful in maintaining his scientific standing.

An instance of incautious conduct in this respect was afforded in a recent case in Washington, D. C., where the question of milk standards and the interpretation of analyses came to the front. One witness, who holds a high position in a leading Eastern technical school, testified that he "could not say that milk was dirty" unless he "could see actual dirt in the milk." The same witness in a case at Providence, R. I., a few months before (July, 1913), had passed summary judgment on a score of analyses read to him from the records of the United States Department of Agriculture, and had not hesitated to condemn roundly samples of milk on the basis of reported analyses alone. Judgments to the effect that "that is a filthy milk and also a dangerous one," "that contains a large amount of cow manure and intestinal types of bacteria that go along with it," "there is a milk which is undoubtedly from a cow suffering from an udder infection," were pronounced by this witness in Providence when the records of milk analyses, without any other data, were laid before him. In Washington this witness testified that he could not say that milk containing 48,000,000 bacteria per cubic centimeter was either decomposed or filthy. In Providence he declared of a milk containing 20,000,000 bacteria per cubic centimeter that "the chief thing that can be said against the milk is that it is dirty and old; that is probably enough to say against it." In Providence, in July, the presence of the *Bacillus coli* type in milk indicated to this witness the presence of cow manure; in Washington in the following March he answered in the negative the question whether or not "the presence of *B. coli* in milk necessarily indicates that it was contaminated with fecal matter." At Providence, streptococci in milk were considered an indication of "danger," of inflammation of the udder, etc.; at Washington, streptococci, in the opinion of the same witness, were of no significance, but were simply part of the flora of normal milk.

There is no need to continue the discouraging recital. Apart from the wreck of individual reputation which is sure to follow such rash tergiversation as here illustrated, there is another side to this question which, as a matter of general scientific policy, seems to us more important.

This is the responsibility that men of science should feel both to the community and to the professional body of which they form a part. This sense of responsibility should be rooted in a steadfastness of conviction which not only should make it impossible for these men to run with the hare and hunt with the hounds, but also should make them scrutinize the essential character of the cases and causes for which they are willing to appear in public. No one knows better than the skilled investigator how much uncertainty there still is concerning many matters on which definiteness would be of great practical importance. All the more reason why he should not utilize his expert knowledge of the factors of uncertainty to confuse public-health issues and throw dust in the eyes of the uninformed. To defend dishonest or careless milkmen by invoking the well-known technical difficulties in the way of interpreting bacterial analyses seems a questionable proceeding. There may be a difference

2. Ewins, A. J.: Acetylcholine, A New Active Principle of Ergot, Biochem. Jour., 1914, viii, 44.

of opinion as to the significance of a particular number or kind of bacteria in milk; there may be none as to the conviction of a particular milkman of carelessness or lack of cleanliness. On the occasion of a conspicuous ocean disaster a few years ago, it was said of a prominent steamship director that the situation in which he found himself demanded of him "a certain particularity of behavior." The situation of the modern man of science requires likewise a certain particularity of behavior. He owes his standing in the community in large part to the reputation for probity, candor and clear-headedness of the professional body to which he belongs. Every act of his tends to raise or lower in the public estimation the prestige and influence of the body of scholars with whom he is associated. He has obligations to his profession. Again, the non-technical public deserves from him an unwillingness to ally himself with doubtful causes, a clearness and steadiness of conviction and especially a disinclination to envelop scientific fact and interpretation in a cuttlefish murkiness of doubt and ambiguity.

We are aware that with regard to some questions public-health practice has outrun scientific judgment and needs to be set right. We know that the manifestation of personal pique and aggressiveness sometimes makes it necessary for scientific men to interpose in the interests of common fairness. Honest differences of opinion will sometimes cause men to align themselves on different sides of a *cause célèbre*. But it is clear also that there is far too much of the expert testimony which faces both ways, which befogs rather than illuminates, and which is partisan rather than candid. We appeal for a higher standard in this important field in which science has an opportunity to interpret itself to the community by making evident its disinterestedness and its desire most effectively to serve its time.

Current Comment

THE PROPHYLAXIS OF TETANUS

Statistics indicate[1] that probably there will be fewer deaths and injuries as a result of this year's celebration of the Fourth than of any previous year's. Notwithstanding, physicians cannot afford to overlook the possibility that they may have cases of tetanus to treat — and to prevent. In another column[2] we publish an article on the prophylaxis and therapy of tetanus. For convenience we here summarize the most important points in the prophylaxis:

1. Carefully and thoroughly remove every particle of foreign matter from the wound, laying it open, if necessary, under anesthesia.

2. Dry the wound thoroughly, and paint it and the surrounding parts as carefully as possible with iodin, or else cauterize it thoroughly with a 25 per cent. solution of phenol (carbolic acid) in glycerin or alcohol.

3. Apply a loose wet pack, using a solution of some such antiseptic substance as boric acid or alcohol.

4. As soon as possible inject intravenously or subcutaneously 1,500 units of antitetanic serum and continue the injections if indications of possible tetanus arise.

5. In no case close the wound. Allow it to heal by granulation. Remove the dressings and packing each day and apply fresh ones.

The loss of life from tetanus, it should be emphasized once more, is almost entirely preventable. Injection of antitoxin immediately after the injury is received, together with relentless surgical cleansing of the wound under anesthesia, constitutes insurance against tetanus in virtually every case. The few recorded cases in which antitoxin has failed to prevent tetanus have been attributable usually to a local infection which kept the tetanus bacillus alive until the antitoxin was eliminated or destroyed. Hence thorough cleansing of the injured part should not be neglected; and if the wound should suppurate, prophylactic injections of antitoxin should be repeated at intervals of eight or twelve days. If the patient is not seen until the wound is several days old, antitoxin should be given in large doses intravenously or, if symptoms indicate impending tetanus, intraspinally. The reasons for this course are given in a recent editorial.[3] In any case, promptness and thoroughness are the watchwords.

A CONTROVERTED THEORY OF NEPHRITIS

The theory of nephritis proposed by M. H. Fischer[1] has aroused considerable discussion and much criticism. One of the claims made by the Cincinnati physiologist in formulating his views on the subject is that any cell must, under conditions similar to those existing in the cells of the kidney when it is nephritic, be capable of serving as a source of albumin to a surrounding liquid medium, and so be capable of being responsible for a state which in the kidney goes by the name of albuminuria. According to this view, albuminuria represents merely that simple solution of the albumin of the kidney substance itself in the urine; that is, the protein does not come from the blood itself, except in that indirect way in which the proteins of any cell come originally from the blood. We have no desire to enter into a review of the controversy here further than to refer to the generally accepted belief that the urinary protein found in nephritis represents serum protein rather than tissue protein. Evidence in favor of this and contrary to Fischer's hypothesis has lately been offered by Dr. Salus[2] of the Hygienic Institute in the German University at Prague, Bohemia. Like previous investigators he has been able to develop a precipitin for human serum proteins by using albuminous urines as antigens. On the other hand, so-called organ plasma, a solution of tissue proteins prepared

1. The Spread of the "Sane Fourth" Movement, THE JOURNAL A. M. A., June 13, 1914, p. 1898.
2. Tetanus, Therapeutics Department, this issue, p. 1964
3. The Serum Treatment of Tetanus, editorial, THE JOURNAL A. M. A., April 11, 1914, p. 1174.

1. Fischer, M. H.: Nephritis, New York, 1912, John Wiley & Sons; The Treatment of Nephritis and Allied Conditions, THE JOURNAL A. M. A., May 31, 1913, p. 1683.
2. Salus, G.: Biologische Versuche mit Organplasma, Biochem. Ztschr., 1914, lx, 1.

after completely removing the blood from various organs by Pohl's method, gave no reaction with the antiserum produced by injection of the protein excreted in nephritis. As, for the present, these biologic reactions offer the greatest promise of success in determining the identity of individual proteins, they place the burden of proof on those who maintain that the urinary protein of nephritis is merely the dissolved contribution of kidney cells subjected to an abnormal environment, rather than escaped blood components.

SPECIAL TRAINING FOR THE SPECIALIST

Notice is given elsewhere[1] of a two-year graduate course offered by the University of Minnesota to physicians desiring to specialize in diseases of the eye, ear, nose and throat. Satisfactory completion of this course will secure a suitable degree. This is a parallel to the graduate courses in public health given by five of our leading universities[2] preparatory to a special degree in public health. Such courses as these provided by high-grade universities will place the term "specialist" on a reliable basis. If such special courses are worth while for the development of public-health experts and for specialists in diseases of the eye, ear, nose and throat, why should not similar and equally thorough courses be established to furnish acceptable training in the other specialties of medicine? This idea may also hold a solution for the problems relating to special fields of practice now being exploited by various medical sects. Surely, before any one proposes to specialize in any particular field in the practice of medicine he should have secured, in addition to the usual medical course, further training in the diagnosis and treatment of the particular diseases included in that specialty. The establishment of the special graduate courses in public health by leading university medical schools and this special course for ophthalmologists at the University of Minnesota points to a new field in which there are great possibilities for the development of medical education.

BRITISH VIEWS OF AMERICAN MEDICAL ETHICS

Following the publication of the "Family Medical Encyclopedia" in England, as has been previously mentioned,[3] a storm of protest arose in the British Medical Association, at the publication of a list of contributors in such a book intended for the public. This type of medical advertising was severely condemned and likened to "the fever of self-advertisement which characterizes the American profession from tip to toe." In response to demands on the part of numerous members the Council of the British Medical Association has promulgated certain rules concerning the publication of medical books intended for the laity. These regulations are embodied in a letter from the London correspondent of THE JOURNAL, which appears on another page.[4] Without attempting, however, to discuss further the history of this monumental blunder — which may, perhaps, have been not entirely a blunder — on the part of so many well-known English medical men, let us revert to the point made in the previous editorial. It will be noted that our correspondent says: "It must be borne in mind that the professional rule against advertising is much more stringent in this country than in America." He voices, no doubt, the general impression of the foreign physician concerning American medical practitioners. When are these insults to cease? Can our foreign contemporaries point to a single incident in which medical men of America of equal rank with the English physicians concerned have loaned their names to such an outrageous enterprise? Can they point to a single American, connected with a reputable clinic, who would authorize and countenance the publication of such an obvious and misleading puff as was sanctioned by Drs. Krönig and Gauss in a recent issue of *McClure's?* Certainly, so far as we can determine, they will be unable to find one. The wise sanitarian will disinfect his own premises before naming as unclean the domicile of his neighbors.

THE DISTRIBUTION AND ELIMINATION OF ARSENIC IN THE BODY

Although arsenic can no longer claim the popularity that it once enjoyed as a "family poison," it is used often enough to make accurate information regarding its distribution in the organism desirable. Furthermore, the increasing use in practical medicine of the organic compounds of arsenic, notably salvarsan and its derivatives, emphasizes from the point of view of pharmacotherapy as well as that of the toxicologist and medicolegal expert, the need of knowledge respecting the fate of the drug in the body. We believe that we do not err in admitting that various investigators who have studied the retention of arsenic in the body have obtained results which decidedly disagree. A recent experiment in the department of physiology at the University of Missouri[1] has furnished data regarding the distribution of arsenic, in one case twenty-four hours after feeding 35 mg. to a fasting animal and before any elimination took place; in another, twenty days after administration of the same dose. The muscles retained the largest absolute amount of arsenic. In each case the metal was found to preponderate in the muscle, liver and intestine, respectively. In the animal killed early, the blood assumed fourth and the skin fifth place in the retention of the poison; but after twenty-one days these tissues had had time to lose all detectable arsenic. Their tendency is to eliminate it as rapidly as possible. It is interesting that the heart, although one of the smaller organs, is high in the order of retention, while the spleen, spinal cord, lung and kidney were lowest. No arsenic was excreted at any time with the feces. The results

1. This issue, page 1983.
2. Universities of Pennsylvania, Michigan, Wisconsin and New York, and Harvard.
3. THE JOURNAL, May 2, 1914, pp. 1407, 1414.
4. See London Letter, this issue, p. 1977.
1. Dutcher, R. A., and Steel, M.: The Estimation and Retention of Arsenic as Determined by the Koch-Norton Method, Jour. Am. Chem. Soc., 1914, xxxvi, 770

indicate, under the conditions presented in this research, that a single dose of arsenic, not large enough to disturb metabolism noticeably, is eliminated in about fifteen days.

STATISTICS OF FOURTH OF JULY INJURIES

The old life-destroying methods of celebrating Independence Day are tolerated less and less with each succeeding year. Public opinion has been aroused, the primary stimulus having been supplied by the annual statistics which we have collected and published for eleven years. Much of the credit for this work is due to the physicians who have kindly cooperated with us by sending in reports of cases. May we hope that this year also every physician who has a Fourth of July injury to attend will send us a report? What is desired is a brief mention of the actual injury, the immediate cause (the kind of cartridge or fireworks used) and the result. It is important that effort be not relaxed until the "safe and sane Fourth" has become permanently established everywhere.

Medical News

DISTRICT OF COLUMBIA

Hospital for Women.—The sundry civil bill report to the House of Representatives contained an item of $200,000 for the completion of a hospital for women.

Eradication of Tuberculosis.—The report of the District Health Department contains an elaborate account of its activities in limiting and ultimately suppressing tuberculosis. It is recommended that a campaign should be organized against this disease as a public health measure; that facilities for the treatment of incipient tuberculosis should be made available at hours adapted to the ordinary workingman; that the existing hospital facilities should be made available to the person in moderate circumstances; that some method should be provided whereby persons in moderate circumstances desiring to take treatment in their own homes could be assisted. The case-rate of tuberculosis in the district during the last fiscal year was 223 white persons and 643 colored persons per 100,000; and the death-rate from all forms of tuberculosis was 133 white and 504 colored; and that the rate for pulmonary tuberculosis alone per 100,000 was 120 white and 426 colored persons.

ILLINOIS

New Officers.—Galesburg Medical Society, June 2: president, Dr. Ralph C. Matheny; secretary-treasurer, Dr. Clarence B. Ripley.

Personal.—George Peter Dreyer, A.B., Ph.B., has been appointed dean of the junior faculty, professor of physiology and physiologic chemistry, and head of the department in the College of Physicians and Surgeons.——Dr. Charles F. W. Eberlein, chief of staff of the Oak Forest Infirmary, has resigned.

Sanatorium Notes.—The Kane County Anti-Tuberculosis League has planned a temporary tent colony, pending favorable action on the county tuberculosis sanatorium proposition. A site has been selected near Gilbert, and a donation of $2,000 has already been promised.——Plans for a new sanatorium building to be erected at Collinsville by the Harrison Tuberculosis Association have been completed, and ground is to be broken within the week. The building will be T-shaped, 176 feet deep, with a frontage of 35 feet and will accommodatae thirty patients.

Chicago

Chicago Medical Society Elects.—At the annual election, June 16, the following officers were elected: Dr. Charles J. Whalen, president; Dr. Charles E. Humiston, secretary.

Sanatorium Work Well Done.—Dr. Theodore B. Sachs, president of the board of trustees of the Municipal Tuberculosis Sanatorium, reports that the work on the sanatorium is being done according to contract, and that the institution will be ready for occupancy in November.

Meet after Fifty Years.—At the graduation exercises of the Northwestern University Medical School in Chicago, two graduates of the class of 1864 met for the first time since their graduation. They were Drs. Albert L. Converse of Springfield and P. J. Kelsey of New York City. A luncheon was given for the two alumni by President Harris of the University, at his home in Evanston.

Rush Alumni Elect.—At the annual meeting of the Alumni Association of Rush Medical College in Chicago, June 10, the following officers were elected: president, Dr. Arthur M. Corwin, Chicago; vice-presidents, Drs. Daniel H. Bowen, Waukon, Iowa; Charles J. Lewis, Chicago, and John R. McDill, Milwaukee; secretary, Dr. Charles A. Parker, Chicago; treasurer, Dr. Elmer E. Kenyon, Chicago, and necrologist, Dr. John J. Stoll, Chicago.

Internship Required.—The faculty of the Northwestern University Medical College, at a recent meeting, voted that hereafter every student who matriculates will be required to spend at least one year as an intern, and in an acceptable hospital, before a degree will be given. This school is the fourth medical school to make hospital internship a condition for a degree, the other schools being University of Minnesota Medical Department, Rush Medical College and the Medical Department of Leland Stanford University.

Bust of Dr. Steele Presented.—On June 10 a bust of Dr. D. A. K. Steele was presented to the College of Physicians and Surgeons of the University of Illinois by the faculty and alumni of the college. The presentation was made by Dr. Adolph Gehrmann and the bust was accepted by President James of the university. It was largely through Dr. Steele's efforts that the organization of the College of Physicians and Surgeons was united with the University of Illinois, and for more than thirty years Dr. Steele has devoted his efforts to the supporting and upbuilding of the school.

Alumni Meeting.—At the alumni meeting of the Association of the College of Physicians and Surgeons of the University of Illinois, held in Chicago, June 10, addresses were made by President Edmund Janes James of the university, who announced a plan of asking $1,000,000 from the legislature for the construction and endowment of a teaching hospital as a part of the university; by W. S. Abbott, president of the board of trustees, and Dr. Albert L. Brittin, Leslie, Ill., president of the Illinois State Medical Society. The following officers were elected: president, Dr. J. M. Berger; vice-presidents, Drs. Charles H. Phifer and George J. Lorch; secretary, Dr. Frank Chauvet; treasurer, Dr. Robert N. Morris, all of Chicago.

INDIANA

Hospital Units Ready.—The State Board of Health expects to occupy two units of the State Hospital next week, and has asked the city comptroller to recommend a temporary loan to the city council of $65,000 for the use of the board.

A Clinic for Babies.—A clinic for examining babies and to give advice to mothers concerning the child's health and diet is being maintained by the Children's Association of Indianapolis. The stations are in charge of Drs. J. Don Miller, Walter D. Hoskins, Leslie H. Maxwell and Lehman M. Dunning.

Disease Prevention Day.—The governor has consented to issue a proclamation calling the people of the state to observe a day in October, to be designated as Disease Prevention Day. Sixty antituberculosis societies will lead in observing the day, and will have the cooperation of the State Board of Health, the State Anti-Tuberculosis Society and municipal officers of many cities.

Personal.—Dr. T. Victor Keene has been elected president and Dr. Thomas B. Eastman vice-president of the Board of Health of Indianapolis.——Dr. J. Willard Parrish, Shelbyville, has been appointed physician of the Shelby County Orphans' Home.——Dr. Gustavus B. Jackson has been appointed a member of the Indianapolis Board of Health, vice Dr. Mavity J. Spencer, term expired.——Dr. Henry O. Wells, Fort Wayne, has been elected president of the Blue Cass Springs Sanatorium, Woodburn.

Long Hospital Dedicated.—Dedicatory exercises of the Robert W. Long Hospital were held in the chambers of the House of Representatives, June 15. Governor Ralston presided and an address was delievered by Dr. Henry I. Pritchett, president of the Carnegie Institute for Medical

Teaching, on "Medical Schools and the State." The guests were taken to the Robert W. Long hospital where the dedicatory exercises proper were held, in the East room. Dr. and Mrs. Robert W. Long formally presented the hospital to the state and Governor Ralston accepted the gift in behalf of the state. In the evening a banquet was given at the Claypool Hotel, where Dr. Pritchett, President Bryan of the Indiana University, Governor Ralston, Mayor Bell of Indianapolis and others delivered addresses.

Verdict in Favor of Physicians.—The suit brought by Mrs. Anna Harrell of Shelby County against Drs. Orange G. Pfaff of Indianapolis and Moris Drake of Shelbyville for alleged malpractice resulted in a verdict in favor of the physicians in the Shelby County court, June 9. The plaintiff asked $20,000 damages on account of the failure of the surgeons to remove a piece of gauze from plaintiff's abdomen following an operation for ruptured ectopic pregnancy, as alleged, the gauze coming away later, after having caused the patient great suffering. The surgeons showed that the gauze had been placed in the culdesac of Douglass for drainage purposes, and in a careful professional manner.

IOWA

Iowa Medical Journal Suspends Publication.—The *Iowa Medical Journal* has discontinued publication and has been succceeded by *The Journal of the Iowa State Medical Society.*

Personal.—Dr. Amos W. Carlile has been appointed local surgeon of the Chicago and Northwestern System at Manning, vice Dr. Robert R. Williams, resigned.——Dr. Curtis E. Bower, Arlington, has given up his practice on account of ill health, and will make his home in Colorado.——Dr. Charles H. Bower has been appointed health physician of Council Bluffs.——Dr. Mary Lawson Neff has returned to her home in Des Moines after six weeks spent in the state reformatory, doing special psychologic work.——Dr. W. Eugene Walcott, Merrill, and Dr. and Mrs. Donald Macrea, Jr., Council Bluffs, have sailed for Europe.——Drs. Fred J. McAllister and Albert J. Meyer have purchased a house in Hawarden which they will remodel and convert into a hospital.——Dr. Arthur H. McCreight and family, Fort Dodge, have returned from Europe.

MARYLAND

Alumni Reunion.—The alumni of the College of Physicians and Surgeons, Baltimore, will make their headquarters at the Alamac Hotel, Atlantic City, during the meeting of the American Medical Association.

Personal.—Dr. William D. Cawley, Elkton, has been appointed physician at the Cecil County Insane Asylum, vice Dr. Philip B. Housekeeper, North East, deceased.——Dr. Philip Briscoe, Mutual, Calvert County, has been elected president of the State Board of Aid and Charity.

Graduate Nurses for the Insane.—Six women and two men received certificates of graduation from the Nurses' Training School of Springfield State Hospital for the Insane on June 9, the first class of this kind to be formed in a Maryland institution for mental cases. Dr. Adolf Meyer, director of the Henry Phipps Psychiatric Clinic of Johns Hopkins Hospital, made the address to the graduates and the certificates were conferred by Dr. Arthur P. Herring, secretary of the State Lunacy Commission.

Important Post for Professor Whipple.—Dr. George Hoyt Whipple, associate professor of Johns Hopkins University, has been chosen director of the Hooper Foundation for Medical Research by the board of regents of the University of California. Dr. Whipple is widely known in his profession. He is a graduate of Yale University and the Johns Hopkins Medical School. He served for several years in the Ancon Hospital in the Panama Canal Zone and is a member of many medical and research societies.

Medico-Psychological Meeting.—The seventieth annual meeting of the American Medico-Psychological Association, held in Baltimore from May 26 to 29, proved most successful. Addresses of welcome were delivered by Gov. Phillips Lee Goldsborough, Mayor James H. Preston, Dr. Hugh H. Young and Dr. Randolph Winslow. The response was made by Dr. Carlos F. MacDonald, New York City, president of the association. The officers elected are: Dr. Samuel E. Smith, Richmond, Ind., president; Dr. Edward N. Brush, Towson, Md., vice-president;Dr. Charles D. Wagner, Binghamton, N. Y., secretary. The place chosen for the next session was Old Point Comfort, Va.

MISSOURI

Physician's Portrait Presented.—A life-size oil portrait of Dr. Joseph M. Wood, a pioneer practitioner of Kansas City, was presented by his daughter to the Board of Education of Kansas City, May 21. Historical reminiscences of Dr. Wood were given by Drs. Edward W. Schauffler and David R. Porter.

Personal.—Dr. Rush E. Castelaw has resigned as head of the Kansas City Hospital.——Dr. George R. Thompson, St. Joseph, was elected superintendent of State Hospital No. 2 on June 4, vice Dr. Abra C. Pettijohn. The officers and employees of the institution presented Dr. Pettijohn with a diamond stick-pin.——Dr. Frank W. Flower, Carthage, announces that after forty years of active practice he will retire from the practice of medicine.——Dr. William T. Elam, St. Joseph, charged with killing W. K. Cramer, Chicago, was acquitted by the jury, May 29.—Dr. Oliver W. H. Mitchell, Columbia, has assumed his duties as city bacteriologist of Syracuse, N. Y.——Drs. Louis J. Danadurant, Floyd H. Spencer, Joseph J. Bansbach and Clarence A. Good, St. Joseph, returned from Europe, May 26.——Dr. John C. Kessenger, Milan, was operated on in Rochester, Minn., May 13, and is reported to be doing well.

St. Louis

Dispensary Moves.—The evening dispensary for women, which has been located at 1607 Washington Street for twenty-one years, has moved and its quarters are now at 510 North Fifteenth Street. Clinics are held on Monday, Thursday and Friday from 7 to 9 p. m.

Personal.—Dr. Carl Orth has returned from Europe.——Dr. Charles H. Eyermann has succeeded Dr. Theodore P. Brookes as assistant physician of the city dispensary. Dr. Brookes has started for Europe.——Dr. and Mrs. Lucius A. Walton celebrated their fiftieth wedding anniversary, May 26.

NEW YORK

Long Island Doctors Meet.—The fortieth annual meeting of the Associated Physicians of Long Island was held at Avery's Five Mile Look on June 6. Dr. Walter A. Sherwood presided. Among those who made addresses were Drs. James V. May, Port Gibson, Miss., and A. J. Rosenoff. The scientific session was followed by a shore dinner.

Buffalo Alumni Elect.—At the fortieth annual meeting of the University of Buffalo Alumni Association, June 3: president, Dr. George F. Cott, Buffalo; vice-presidents, Drs. Robert T. French, Rochester, N. Y.; William B. Hare, Portland, Ore.; Abram T. Kerr, Ithaca; Burt C. Johnson, Buffalo, and Mary B. Moody, Los Angeles; secretary, Dr. Julius Richter, Buffalo; treasurer, Dr. William F. Jacobs, Buffalo.

May Stop Hospital Inquiry.—It is intimated that the state authorities have not been pleased at the manner in which the State Hospital has been conducting its investigation, especially with regard to the quality of the food supplies. It is held that the hospital commission is itself under fire and that it has shown a tendency to exonerate the attaches of the various hospitals and has gone out of its way to discredit the testimony of the federal inspectors.

New York City

Gift to New York Academy of Medicine.—Dr. Rowland G. Freeman has presented the library of the New York Academy of Medicine a fine copy of Bidloo (Godefridus) Anatomia humani corporis, 105 plates, folio. Amstelodami, vid. J. a Someren, 1685.

Hospital Needs Money.—A campaign has been started to raise $150,000 for St. John's Hospital, Long Island City. The money is needed to enlarge the hospital as it is the most important institution of its kind in Queens and is overcrowded most of the time.

Removal of Brooklyn Clinic.—The Brooklyn Antirabic Clinic, until recently conducted at the Brooklyn Borough Office, will be removed to 29 Third Avenue. It will be open on week days from 10 a. m. to 1 p. m., and on Sundays and holidays, for all cases from the boroughs.

Typhus Fever Patient Comes to Port.—The *President Grant* arrived at Quarantine recently with a case of typhus fever in a child 9 years of age, on board. The 226 steerage passengers who occupied the same section were transferred to Swinburne Island to undergo two weeks' observation.

Doctors' and Nurses' Home.—The Architectural Bureau of the Department of Health has filed plans for the construction of a seven-story building with basement for the doctors and nurses of the Willard Parker Hospital. The building will be fire-proof, reinforced concrete construction, with a frontage of 100 feet, and a depth of 82½ feet, and will cost $250,000.

Milk Depots Open.—Ten additional milk stations were opened on June 2 by Mr. Nathan Straus. This makes eighteen which he supports during the summer and eight during the entire year. At all of these stations milk suitably modified and pasteurized for infant feeding is furnished at less than the cost price. Mr. Straus has carried on this charity since 1892.

Milk-Supply.—The report of the Department of Health on the city milk-supply shows that at the present time about 99 per cent. of the total supply is being satisfactorily pasteurized, and that the pasteurizing plants are subject to close supervision by the department. Large numbers of samples of milk are examined bacteriologically to check up efficiency of operation.

To Investigate Coroner's Office.—The City Club has asked Mayor Mitchell to make an investigation of the coroner's office and the mayor has directed the commissioner of accounts to begin the investigation at once. Aside from dereliction of duty it is believed that the charter organization of the office does not make for efficient administration and it is hoped that this investigation will be of constructive value.

Medical Schools Graduate.—The annual commencement exercises of the College of Physicians and Surgeons of Columbia University and of the New York University and Bellevue Hospital Medical College were held on June 10. The graduating class numbered seventy-one men. The Hippocratic oath was administered by the dean of the college, Dr. Samuel W. Lambert. All the graduates of the University and Bellevue Hospital Medical School received hospital appointments. On this occasion the honorary degree of doctor of science was conferred on Dr. Aristides Agramonte of Havana.

Bichlorid Poisoning.—The ordinance restricting the retail sale of bichlorid of mercury tablets in Greater New York went into effect on March 1. The records which have been collected from the coroner's office show that there were ten deaths from bichlorid poisoning during the period from March 1 to June 1; six of these were suicides and four were accidental. This is a considerable decrease in the number of deaths from poisoning by this drug and it is believed the decrease will be much more marked hereafter as supplies which were kept in homes will become exhausted and cannot be replaced.

Personal.—Dr. Lester D. Volk and Dr. Gerard Kasper have resigned their positions as coroner's physicians in Brooklyn.——Dr. Arthur H. Elliott of Brooklyn and Dr. and Mrs. William S. Dennett of Manhattan have sailed for Europe.——Dr. and Mrs. J. Leeming Walker of London, Eng., arrived in this country on Tuesday; they will occupy the cottage of Dr. H. Holbrook Curtis for the season.——Dr. Anna Hubert of Seattle, Wash., has been appointed resident physician at the workhouse on Blackwell's Island. This appointment provides for the examination of female prisoners by a woman.—Drs. Annie S. Daniels and W. I. Hull have sailed for Europe.

NORTH CAROLINA

Fresh-Air Camp for Babies.—The establishment of a fresh-air camp and sanitarium for babies at Saluda was enthusiastically endorsed at a meeting held in Spartanburg, S. C., May 29, and a committee was appointed to promote the plan.

Do Not Wish Appropriation Reduced.—Five hundred representative citizens of Wilmington at a mass-meeting, June 2, adopted resolutions demanding that the city council reconsider its action of reducing the annual appropriation for the city health department below the amount agreed on by the municipal health officers and the county commissioner.

Personal.—Dr. Richard H. Lewis, Raleigh, who has served for more than thirty years as trustee of the university, and for the major portion of that time as secretary of the board, has resigned on account of ill health.——Dr. Walter C. Ashworth, Greensboro, president and director of the Glenwood Park, Telfair, Sanitarium, has gone to Europe. Dr. Howard S. Kinne, Loganton, Pa., will have charge of the sanitarium in Dr. Ashworth's absence.

OHIO

Personal.—Dr. A. W. Davis, city health officer of Canal Dover, has resigned.——Dr. Valloyd Adair, as the result of competitive examinations, has been appointed health officer of Lorain.——Dr. Morris C. Tuholske has been reappointed medical examiner of the public schools of Akron.——Dr. Rockwell B. Hubbard, Sandusky, was seriously injured, recently, as a result of a head-on collision between his automobile and an electric train.

Hospital Notes.—At a meeting of the citizens of Barberton, June 2, it was decided immediately to incorporate a stock company for the purpose of erecting a hospital, to cost from $50,000 to $60,000, and to be known as the City Hospital Company of Barberton. Dr. William A. Mansfield was elected temporary president, and Dr. Herbert A. Rodenbaugh, temporary secretary of the organization.——The cornerstone of St. Elizabeth's Hospital, Youngstown, was laid by Bishop Farrelly, May 30. The building is expected to be ready for occupancy early in January of next year.——A new hospital is to be built in Fremont, to cost $150,000. Of this sum, $100,000 was bequeathed to the city on the condition that an additional sum of $50,000 be raised by the citizens.

Trachoma in Ohio.—Dr. F. G. Baudreau of the State Board of Health, found 23 of the 80 inmates of the Athens County Children's Home suffering from trachoma. Since the report by Dr. Joseph W. Schereschewsky, Washington, of the Public Health Service concerning trachoma in the employees of the Youngstown Sheet and Tube Works at East Youngstown, and on the generally bad sanitary conditions of the town, overcrowding of lodging and boarding houses, etc., action has been taken to remedy conditions by the town council. The medical department of the Sheet and Tube Works has also instituted many reforms, have bettered sanitary conditions, and are cooperating with the city authorities. The trachoma hospital established by the company will soon be supplied with tub and shower baths for the benefit of the citizens generally and the employees of the company, for the use of which a very small fee will be charged. The council was recently addressed by Dr. Sidney M. McCurdy, chief surgeon, and J. M. Wolz, head of the safety department of the Sheet and Tube Works, on the necessity for better housing and better municipal sanitation.

Cincinnati

Honor to Kramer.—Dr. Simon P. Kramer was given a banquet by physicians of Cincinnati, May 20, at which Dr. Charles L. Bonifield was toastmaster.

Contagious Disease Hospital.—Plans have been completed for the contagious portion of the General Hospital, which is to be constructed west of the tuberculosis group at Lick Run. The building will be two stories and basement in height, 140 feet in depth and will cost $35,000.

Academy Clinics.—A series of interesting clinics were held under the auspices of the Cincinnati Academy of Medicine at the City Hospital, by Drs. William D. Haggard, Nashville, Tenn.; Dr. Wendell C. Phillips, New York City, and Richard C. Cabot, Boston, on the mornings of June 10, 11 and 12.

Summer Lectures.—On June 9, the Health Department inaugurated a series of lectures for district physicians, school nurses, supervisors of nurses and visiting nurses. One June 9, Dr. Frank H. Lamb spoke on "Physiology in Metabolism"; on June 10, Dr. Alfred Friedlander spoke on "The Treatment of Gastro-Enteritis and Other Diseases Peculiar to Children," and on June 11, Dr. Benjamin K. Rachford spoke on "Infant-Feeding."

PENNSYLVANIA

Philadelphia

American Orthopedic Association.—Clinical Day of the twenty-ninth annual meeting of the American Orthopedic Association was held at the University Hospital on Wednesday, June 17.

Rapid Transit Safety Contest.—The Safety Bureau of the Rapid Transit Company has awarded prizes for essay, verse or drawing expressing a practical means of prevention of street accidents. The contest was opened to children in the city schools.

To Stimulate War on Flies.—Director Harte of the Department of Public Health and Charities has started a fly-catching

contest, opened to every boy scout. Prizes have been offered to those who catch the largest number. The contest will be conducted by the various troops, and the troop-master will be judge of the boys within his troop.

Small Appropriation for Mosquito Extermination.—Councils have appropriated only $1,400 to fight mosquitoes in this city. A meager fund with which to break up the breeding-places in the marshes and pools around Philadelphia, which is always open to breeding-places for mosquitoes, as 8,500 acres of the city's area is below the level of high water of Delaware and Schuylkill Rivers.

Women to Enter Medical Department of the University of Pennsylvania.—It has been announced that the Medical Department of the University of Pennsylvania has decided to open the doors of its medical department to women. It has been stated that this announcement will be made officially at the annual commencement. It is also predicted that the dental department will be opened later to women.

Personal.—Dr. James Tyson was a guest of Chief Surgeon George W. Reese of the Shamokin Hospital on May 27, and guest of honor of the Shamokin Medical Society at a banquet at the Windsor Hotel the same evening. Dr. A. MacKensie Forbes of Montreal, Canada, will give a demonstration of his method of applying a plaster cast in treatment or correction of scoliosis, at the Methodist Hospital, on Monday June 22, at 10:30 o'clock.

Campaign for West Philadelphia Hospital.—The campaign to raise $150,000 for the new building for the West Philadelphia General Homeopathic Hospital opened with a dinner to the captains at the campaign headquarters, in Horticultural Hall, June 9. A large clock has been built at Fifty-Second and Chestnut Streets to indicate the returns, and forty-five smaller clocks have been placed in prominent places in West Philadelphia. At the end of the third day a total of $23,917 had been subscribed.

Hospital News.—The Municipal Summer Hospitals for the care of sick children and infants were opened at the Race Street and Chestnut Street piers, June 15. Councils placed $6,500 at the disposal of the director of health to increase the accommodations of both these hospitals. Dr. S. W. Newmayer, assistant medical inspector, has charge of the Chestnut Street pier, which is equipped with twenty beds and a corps of three nurses.——The new Jewish Maternity Hospital at Sixth and Spruce Streets was dedicated June 9.——The contract for two additions to the St. Mary's Hospital has just been awarded. The new structure, of brick with stone and terra-cotta trimmings, will consist of a five-story and basement wing to be built on Palmer Street, a distance of about 170 feet, with another wing along Sepviva Street, a distance of 68 feet. The greater portion of this wing will be five stories high and will contain a convent for sisters and a power-house with a laundry. There will be a roof garden with facilities for the treatment of sunstroke and heat cases. The main entrance will be on Palmer Street.

TENNESSEE

Colleges Merged.—It is reported that the Lincoln Memorial University Medical Department of Knoxville has merged with the University of Tennessee College of Medicine, located at Memphis. Under the terms of the merger, the three remaining classes will be taught at the University of Tennessee, but the degrees will be granted by the Lincoln Memorial University. The last class will be graduated, therefore, in 1917.

TEXAS

Sanatorium Burns.—The tuberculosis sanatorium at 219 Dullnig Street, San Antonio, was destroyed by fire, May 29, with a loss of about $3,000.

New Officers.—North East Texas Medical Association at Texarkana, June 2: president, Dr. Robert H. T. Mann; secretary, Dr. Edwin L. Beck, both of Texarkana.

Alumni Elect.—At the annual meeting of the alumni of the State Medical College, Galveston, May 30, the following officers were elected: president, Dr. Holman Taylor, Ft. Worth; vice-president, Dr. W. Wallace Ralston, Houston; secretary, Dr. Harry O. Sappington, Galveston.

Personal.—Dr. Joseph E. Dildy, Lampasas, narrowly escaped drowning while attempting to ford a swollen creek near Lampasas, June 4.——Dr. James E. Lay, Jr., Sweet Home, health officer of Lavaca County, has resigned.——Dr. E. M. Wood, Georgetown, has been appointed a member of the State Board of Medical Examiners, vice Dr. J. H. Evans, deceased.

Compulsory Vaccination.—The attorney-general has rendered an opinion, on the presentation of the question by the county attorney of Jackson County, to the effect that a local health officer has no authority to require vaccination of schoolchildren as a condition precedent to attendance at school, nor can he close the schools on failure to observe such requirement. It is held that authority to close the schools can only be exercised by the trustees when there are actual cases of disease in a school.

VIRGINIA

Trachoma in the Virginias.—Surgeon Taliaferro Clark of the United States Public Health Service, in *Public Health Reports*, June 5, reports on the survey of trachoma conducted in Virginia and West Virginia during 1913 and 1914. Inspections were made in twenty-three counties of the state, in which 20,848 persons were examined, among whom 340 cases of trachoma were found, 1.63 per cent. The survey of the mountainous sections of Virginia was completed April 29, 1914, during which ten counties in Kentucky and West Virginia were also visited, and 7,801 persons were examined. Of these, 108 had the disease, 1.38 per cent. Examinations were confined almost exclusively to the schoolchildren, as this was found to afford a very good index of the prevalence of trachoma and saved time over a house-to-house examination. An examination of state institutions shows trachoma also prevalent in counties not visited. The counties of the eastern edge appear to be free from it, a fact which is probably due to infrequent contact with infected territory. No systematic effort is being made to control the spread of trachoma over the infected territory. The necessity of action for suppression of the disease is shown by the 5.29 per cent. of marked visual damage in the total trachoma cases found during the survey of West Virginia. Recent foreign immigration was not an element in the introduction of trachoma. The negro race in the two states is practically free from the disease. Among the recommendations made by Clark are that systematic examinations should be made of all schoolchildren of the states, and the children suffering from active trachoma should be excluded from the schools and placed under medical supervision. A school nurse should be employed wherever practicable, to visit the homes of the children debarred from schools, and put into practice under the physician's directions principles of control. A campaign of education should be instituted in the infected territory through talks and distribution of printed information. Free hospitals of inexpensive construction are recommended at points convenient to groups of the most heavily infected counties. Cooperation of the mining companies should be secured so that systematic examination of miners might be made for trachoma. Improvement should be made in the sanitary condition of the rural schools.

WEST VIRGINIA

Antituberculosis Work.—Dr. Harriet B. Jones, Wheeling, director of the tuberculosis exhibit of the Anti-Tuberculosis League of West Virginia, reports that during the year she has visited 130 towns and 35 counties, has given 365 talks in schools to 37,592 pupils, has lectured 93 times at night to 17,877 adults. The tuberculosis exhibit car, in charge of Dr. Thurman Gillespy, Wheeling, has visited 133 towns and has been seen by at least 100,000. Literature was distributed from the car, in schools, at lectures, in trains and at railroad stations. The car was donated by the Baltimore and Ohio Railroad, and free transportation was given over all roads during the six months of the work. Twenty counties yet remain to be visited, and the work will begin again in the fall.

WISCONSIN

Sanatorium to Be Enlarged.—On May 22, Dr. John R. Currens, trustee of the Maple Crest Sanatorium, Two Rivers, appeared before the board, pleading the overcrowded condition of the sanatorium and the necessity of having separate wards for men and women. An appropriaiton of $3,500 was made.

Leper in Soldiers' Home.—It has been discovered by the medical staff of the Soldiers' Home, West Allis, that one of the inmates, who came to the home from Hot Springs, Ark., about two weeks ago, is suffering from leprosy, believed to have been contracted while serving in the Philippine Islands.

Personal.—Dr. and Mrs. Victor F. Marshall and son and Dr. Albert E. Rector, Appleton, sailed for Europe, June 27.——Dr. John M. Beffel, Milwaukee, has recovered from his

recent illness.——Health Commissioner George C. Ruhland, Milwaukee, has appointed Drs. Leopold Schiller and Emil T. Lobedan as medical aids. Dr. Schiller has been placed in charge of the contagious diseases and Dr. Lobedan in charge of the child welfare. Dr. George R. Ernst, Wauwatosa, remains in charge of the tuberculosis division.

GENERAL

Fight Bubonic Rats.—The House of Representatives, on June 11, sanctioned an appropriation of $200,000 to kill rats and squirrels in California.

Medical Examiners Meet.—The fourteenth annual meeting of the Association of Medical Examiners will be held June 22 at Hotel Denis, Atlantic City, under the presidency of Dr. Henry Wireman Cook, Minneapolis.

American Association of Immunologists.—The first annual meeting of the American Association of Immunologists will be held in Atlantic City, at the Hotel Chelsea, Monday, June 22. A program of interest and importance has been arranged.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian Hospital, Philadelphia, $1,000, by the will of Anna Claghorn.

University of North Carolina, for the construction of an athletic stadium, a donation of $25,000, by Mr. I. E. Emmerson, Baltimore.

St. Justin Hospital, Montreal, a donation of $5,000.

Public Health Day at Biennial.—June 15 was celebrated as Public Health Day at the Chicago meeting of the Federation of Women's Clubs. The program of the conference included the topics of public health, visiting nurses, the rights of childhood, work of women in tuberculosis, value of marriage certificates and the teaching of social purity. The day was under the auspices of the Chicago Medical Women's Club.

Students of Epilepsy Hold Meeting.—At the anual meeting of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics, held in Baltimore, May 25, under the presidency of Mr. William C. Graves, Chicago, about 200 physicians and laymen were present. The next annual meeting will be held in Skillman, N. J., at the New Jersey Home for Epileptics, as guests of the president of the board of managers and Dr. David F. Weeks, the superintendent. The following officers were elected: president, Dr. Albert S. Priddy, Lynchburg, Va.; vice-presidents, Drs. David F. Weeks, Skillman, N. J.; J. M. Murdoch, Polk, Pa., and Walter C. Van Nuys, Newcastle, Ind.; chairman of the executive committee, Dr. James F. Munson, Sonyea, N. Y.; and secretary-treasurer, Dr. Arthur L. Shaw, Sonyea, N. Y.

The Russell Sage Institute of Pathology.—At a meeting of the board of directors of the Russell Sage Institute of Pathology, held in New York, June 5, the following officers were elected: president, Dr. D. Bryson Delavan; vice-president, Dr. Simon Flexner; secretary, Dr. Theodore C. Janeway; treasurer, Dr. Graham Lusk. Appointments to the scientific staff were as follows: scientific director, Dr. Graham Lusk; medical director, Dr. Eugene F. Du Bois; chemist, F. C. Gephart, Ph.B.; assistant, Dr. A. L. Meyer. Dr. Lusk reported for Dr. Du Bois that 142 observations had been made on patients and on some normal controls during the past year and a half, using the respiration calorimeter established in the second medical division of the Bellevue Hospital. In certain individuals an exact agreement between the actual heat production and the heat calculated from the gaseous exchange during hourly periods was obtained for the first time in man. In the total of all experiments involving the measurement of 23,000 calories, these two methods of direct and indirect calorimetry agree both in health and disease within 1¼ per cent. The investigated cases included nine cases of typhoid during both fever and convalescence, one cretin, seven cases of exophthalmic goiter, one of splenic anemia, another with pernicious anemia, one man with acromegaly, one with hypopituitarism, one with malaria, and one with auricular fibrillation, mitral stenosis and greatly enlarged heart.

CANADA

Hospital News.—The Kingston General Hospital had 2,108 patients during the year 1913: 88 deaths and 76 births. At the Hotel Dieu Hospital the patients numbered 1,823: 62 deaths and 76 births.——The Connaught Home for Nurses has been opened at the Weston Sanatorium near Toronto.——A special building for eye, ear, nose and throat work has been opened at the London Victoria Hospital; also a ward with a roof garden for tuberculosis cases.——Vernon, B. C., has voted $5,000 to its general hospital.

Personal.—Dr. George R. McDonagh, Toronto, has returned from four months in South America.——Dr. William P. Caven, Toronto, will sail for Europe shortly.——Dr. Douglass W. Montgomery, San Francisco, while in Toronto recently, was entertained at dinner by Dr. William H. B. Aikins at the York Club.——Dr. Helen MacMurchy, Toronto, has sailed for England, where she will represent the Ontario government at the Health Conference of the Victoria League.——Dr. Robert J. Blanchard, Winnipeg, for many years chief surgeon of the Manitoba division of the Canadian Pacific Railway, has resigned and Dr. A. W. Moody appointed to the position.——Dr. Robinson of the anatomic department of the University of Toronto, acceptably filled in the lectures of Dr. Andrew W. H. Lindsay, Dalhousie University, Halifax, during the latter's illness. Dr. Lindsay was subsequently drowned in the *Empress of Ireland* disaster.

University News.—April 30 fourteen candidates, thirteen men and one woman, received the degree of M.D., C.M., from Dalhousie University, Halifax. The pathologic department is now housed in a new building erected close to the Victoria General Hospital. The faculty of medicine will occupy the old arts and science rooms when the latter enters into its new quarters.——The Dr. Copwell medical library, which was left to the Nova Scotia Medical Society and the Halifax Medical College conjointly some years ago, is now, owing to the incorporation of the medical college with Dalhousie University, the subject of litigation. The Medical Society of Nova Scotia reminded the university that they had an interest in the library, and it could not be taken over by the university without the society's consent. Hence the university has subjected the matters to the courts for a decision as to legal ownership.——The Ontario government has made a grant of $10,000 to the medical faculty of Queen's University, Kingston. Owing to the recent adoption of the five-year course, there will be required for next session a professor of biochemistry, an assistant professor of physiology and an assistant professor of bacteriology and hygiene. The grant will go toward the increased expenditure in connection with these appointments.——The corporation of McGill University, Montreal, has adopted a regulation requiring all students to produce a certificate of vaccination before entering the university.——The medical department of the Western University, London, Ont., has been granted $10,000 by the Ontario government. Twenty-three were graduated from the department at the close of the present session, Dr. C. C. Cornish, Ingersoll, Ont., being the gold medalist. A professor of physics and a professor of physiology is to be appointed, which will give six full-time professors.——Twenty-five students have been in attendance the past session in the premedical course at the University of Alberta. Next year a two-year course will be given.

LONDON LETTER

LONDON, May 29, 1914.

Adami on Medical Education in Canada

John George Adami, who is now in London, has been publicly awarded the Fothergillian Medal by the Medical Society of London for his distinguished services to pathology. In a press interview he has given his views on medical education in Canada. He regards the outlook as unquestionably hopeful as is evidenced, for instance, in the recent opening of the magnificent hospital at Toronto. This, with its splendid attached laboratories for pathology and pathologic chemistry, is now, he considers, the most up-to-date hospital in the world. It has been possible, by the cooperation of the state, the city and the university, to secure adequate funds, and in Toronto, as in other cities in Canada and the United States, the fact that it has been practicable to start from rock bottom has been a great advantage. The great weakness in Canada, he thinks, is its terrible system of preliminary education, which is due partly to the country having adopted "the unfortunate American ideal of the class system." The democratization of education results in the bright boys of a class idling eight months of the year, and in consequence the ordinary American or Canadian boy is two or three years behind when he comes up to the university. His English is defective, his general knowledge is miserable, and he cannot express himself. Again we have the appalling predominance of women teachers. Owing to the opportunities in the country only the poorer type of man is attracted into teaching and the bulk of preuniversity work is done by women who for the most part are farmers' daughters. So much is this the case that the technical school journals use the word "she" instead of "he" in referring to teachers. A vicious circle

has been started, for the people, finding that their children benefit little either in learning or in general character from the schools, refuse to spend the money necessary to attract good men into the service. The evils of the school training are, however, partly corrected by the individualism of the students when they come to the universities. When one compares Canadian medical education with that of the United States we have one great advantage, says Adami. We have retained the English traditions of allowing the students to walk the hospitals—Sir William Osler succeeded in introducing it into America in the Johns Hopkins Hospital—and as a result of the Canadian method we find Canadian doctors holding a large number of very important positions in the United States. Another difference between ourselves and the States is that they are inclined to think that a student should take a degree in arts before starting medicine. This tends to make a man terribly academic by the consequent length of the curriculum, and thus to unfit him for work as a general practitioner. In Canada we aim rather at giving our men all that is necessary in the preliminary sciences by using medical examples. For example, we rather teach the physics of lenses by means of the ophthalmoscope, and some of the elements of sound by the stethoscope, and we look to the schools to get men familiar with the bare elements of the preliminary sciences.

The British Medical Association and the Issue to the Public of Books on Medical Subjects

The scandal created by the publication of "The Family Encyclopaedia of Medicine" has been described in a previous letter to THE JOURNAL. It must be borne in mind that the professional rule against advertising is much more stringent in this country than in America. A physician is forbidden to bring himself before the public in any way calculated to attract patients. The council of the British Medical Association has issued the following rules: 1. The publication of a book to the public on a subject of general interest—such, for instance, as dietetics—by a medical man is not a transgression of any definite rules of medical ethics if the object of the publication is to inform the public and not to advertise the medical man. 2. Such book may be advertised in the lay press, but the propriety of this would depend on the nature of the advertisement, which should conform to certain recognized principles. 3. There can be no objection to signing the preface to a book if the object of the publication is to inform the public and not to advertise the medical man, but it is desirable that his address should not be added. 4. The publication of a book to the public on medical subjects which contains a large number of prescriptions in common language is highly dangerous to the public and should not be countenanced.

Scientist's Novel Claim

Sir Ronald Ross, K.C.B., F.R.S., the well-known discoverer of the fact that malaria is conveyed by mosquitoes has forwarded to the Chancellor of the Exchequer for submission by him to Parliament a petition setting forth his claims for a grant or pension. He says that he has adopted the precedent of Jenner in order to bring to a head the whole question of the treatment of scientific men in this country. Edward Jenner was a practicing physician and when he discovered vaccination against small-pox he lost most of his practice in consequence of the time spent in the investigation. He accordingly petitioned Parliament which gave him for compensation $50,000 in 1802 and $100,000 in 1807. At present the only grants made by Parliament in consequence of scientific or literary eminence are small pensions varying from $100 to $1,000 a year. These partake somewhat of the nature of charity, as they are granted to persons who have benefited humanity by their work and are in needy circumstances. They are also granted to their widows or children in similar circumstances. Sir Ronald Ross says that the principle here is wrong, not to say ignoble. It is not a question of public charity but public indebtedness. It is not fair that persons should suffer pecuniarily for the advantages which they confer on the world or on their nation. Only in certain branches of science do discoveries result in pecuniary gain, as in the smaller clinical observations which increase the practice of physicians. The greatest discoveries, which determine the germs which cause disease or the methods by which they are carried from man to man, lead to no pecuniary reward, whatever, yet they are just the ones that are most important to the public. Sir Ronald's action is being widely discussed in scientific and parliamentary circles as the principle on which he bases his claim is capable of wide application to all forms of scientific, literary and artistic inventiveness. He suggests that a standing fund and a standing committee should be appointed to investigate claims, the settlement of which he does not think would require more than $100,000 per annum.

PARIS LETTER

PARIS, May 29, 1914.

Adrenal Virilism

At the session of the Académie de médecine, May 26, Dr. Tuffier, *agrégé* and surgeon of the hospitals of Paris, made an interesting communication on the subject of suprarenal virilism: that is to say, organic disturbances of development, characterized either by precocious virility in the infant, or by the masculine aspect which a woman may acquire, even after the menopause, under the influence of a tumor of the suprarenal gland. Tuffier had the privilege of observing an example of the last variety in a woman 62 years of age, who had come under his supervision through copious metrorrhagias. The examination showed a voluminous fibroma; but since the urine contained 70 gm. of sugar to the liter, the wisdom of an operation was doubtful. At the first examination, Tuffier was struck only by the extraordinary general development of the hair of the various parts of the body. A month later, after an antiglycosuric treatment, the patient returned to his care, having only 6 gm. of sugar, and being in a favorable condition for an operation. Less scrupulously shaved than at the former visit, she had a heavy black beard and mustache. Her face was red and swollen; there was a slight exophthalmos and the frontoparietal baldness which is almost exclusively masculine; the limbs were very muscular, and the proportions were altogether masculine. The examination of the external genital organs showed a hypertrophy of the clitoris, which measured about 4 cm., and covered a decidedly developed prepuce. In questioning the patient, it was discovered that these phenomena had developed only since the menopause. The habits of the subject had undergone a like change; she cared for nothing but heavy manual labor—plowing, digging—which did not tire her in the least.

The operation showed, perhaps, the reason for this morphologic curiosity. For, in the course of the laparotomy, the examination of the suprarenal region brought to view a bilateral mass overhanging the kidneys, of a fibrolipomatous consistency. The left ovary had atrophied; on the right ovary there was a tumor the size of a large walnut, soft, hemorrhagic, without vegetations or cysts, and of a sort which Tuffier had never seen before. The uterus was neither fibromatous nor sclerotic, but simply in a state of pure muscular hypertrophy.

This symptomatic ensemble, which was known to the ancients, corresponds to the type called by Apert "hirsutism," by Gilbert Ballet and his pupil Gallais "suprarenal virility." It is seen particularly in female infants, and the symptoms are remarkable. This hyperfunctioning of the suprarenal gland manifests itself differently according to the age of the sufferer. If it hastens the growth of infants to abnormal proportions, it acts quite otherwise in the case of adults, particularly after the menopause, when the metabolism can affect only certain organs, and so provokes only hypertrichosis, hypersthenia and hypertrophy of the genitals.

These signs of virilism should suggest the possibility of a suprarenal tumor, for which an early operation may bring happy results.

Antityphoid Vaccination

The prefect of the Department of the Seine, invited by the Minister of the Interior to spread information about antityphoid vaccine and to facilitate its use, has just informed the doctors of his department by circular that he can furnish them with doses of vaccine if they need them. From the appearance of the first case of typhoid fever, if they think it best to vaccinate, they may get the vaccine either by addressing a request for it directly to the Laboratoire d'hygiène de la Ville de Paris, or by writing their request on the same card which is used to declare cases of contagious diseases.

Donation for Medical Museum at Lyons

The Faculté de médecine de Lyon is authorized to accept a donation made by Dr. Lacassagne, a former professor, of a sum of which the yearly interest, 450 francs ($150), shall be devoted to the use and development of the Musée historique de la médecine et de la pharmacie, built by the Faculté mixte de la médecine et de la pharmacie de Lyon.

BERLIN LETTER

BERLIN, May 22, 1914.

Rachitis and Overcrowding

The well-known Berlin pathologist, von Hansemann, several years ago declared rachitis to be a house disease caused by bad air and lack of exercise. Although this in no way indicates the essential cause, the investigations undertaken in this direction show more and more the importance of this view. Dr. George Levy, the vaccinator, has a very interesting article regarding this subject in the *Archiv für soziale Hygiene*. In 1,000 vaccinated children only 2.2 per cent. were found free from rachitis. The distribution of the illness and its severity are parallel to the density of the population in the respective localities in which the cases originated. The smallest number of cases was found in the homes of three rooms; 350 families who lived in two rooms, living-room and kitchen, and housing from two to thirteen persons had 350 rachitic vaccinated children. If these families lived in groups of three in the two rooms, there would be 25 per cent. medium and 7.3 per cent. very severe cases of rachitis. In groups of four, 35 per cent. and 5.9 per cent. severe; of six, 62 per cent.; of seven, 57 per cent. moderate, and 19 per cent. severe, and lastly of ten—here the figures are unduly small—66 and 17 per cent. If these figures are written under one another, it is distinctly seen how the frequency and severity of the illness rises with the overcrowding.

Annual Meeting of Neurologists and Alienists

At the annual meeting held at Lübeck, May 9, of the neurologists and alienists of northwestern Germany, general papers were read pertaining to the salvarsan therapy of syphilogenous nervous diseases, its dangers and possible complications.

EFFECT OF NEOSALVARSAN INJECTED INTO NERVOUS SYSTEM

The most interesting report was that by Dr. Jacob and Professor Weygandt of the large insane asylum, Hamburg (Friedrichsberg). Using monkeys for their experiments, they studied the pathologic changes in the nervous system that might result from intraspinal injections of neosalvarsan. They used a solution of 0.15 c.c. neosalvarsan in 100 c.c. 0.4 per cent. sodium chlorid solution.

Of this solution, one monkey received 1 c.c. intraspinally; two, 2 c.c. each, one, 0.4 c.c. and one, 0.2 c.c., the corresponding amount of fluid having been previously removed from the spinal canal. The first animal, with 3 c.c. showed no clinical symptoms, was well, and thirteen days later was killed. The macroscopic examination of the nervous system was negative. The second monkey (2 c.c.) killed ten days after the injection, showed neither clinical symptoms nor macroscopic changes in the nervous system. The third monkey (2 c.c.), however, expired the night following the experiment and the fourth animal (1 c.c.) became totally paralyzed two days after the injection (in the hind legs). It was killed seven days after the injection. The macroscopic findings were negative. The animal that received 0.4 c.c. showed paresis two days later and died three days later. The one that received 0.2 c.c. died two days after the injection.

Microscopic changes in the nervous system could be detected in every one of the animals, even in those that gave no clinical symptoms. The parenchymatous changes in the nervous system were very marked, and in the monkey that received 1 c.c., focal lesions were found even in the medulla. The lumbar portion of the spinal cord was affected most.

Two monkeys received each 2 c.c. of the same neosalvarsan solution, intracerebrally and subdurally. One succumbed three days after the experiment; the other developed left hemiparesis the next day, and two days afterward had severe epileptic attacks. The paralytic phenomena and the epileptic fits increased in severity during the following days, and on the sixth day the animal died. In this animal a hemorrhage was found at the place of the injection, and pathologic changes in the brain and spinal cord. The other animal showed such changes only at the place of the injection. Finally, two more monkeys were injected with a 0.15:300 solution of neosalvarsan. The doses were 0.6 c.c. subdurally, and 0.4 c.c. intraspinally. No clinical symptoms resulted and the microscopic examination of the animals, killed, respectively, seven and twenty-four days later showed an intact nervous system.

The conclusions Jacob and Weygandt draw from their experiments is that neosalvarsan in very concentrated solutions is dangerous, but in weak solutions is practically harmless.

Marriages

P. A. SURG. ROBERT A. HERRING, U. S. P. H. S., to Miss Emily Humbar White, at the Marine Hospital, New Orleans, June 4.

P. A. SURG. JASPER VICTOR HOWARD, U. S. N., to Miss Prudence Estelle Wyman of Olympia, Wash., May 28.

SIDNEY HERMAN ADLER, M.D., New York City, to Miss Elsie Tobias of Far Rockaway, L. I., N. Y., June 10.

CAPT. WILLIAM A. WICKLINE, M. C., U. S. A., to Miss Grace Gooding of Washington, D. C., May 5.

JERE LAWRENCE CROOK, M.D., Jackson, Tenn., to Miss Millian Cooke Green of Elk Hill, Va., June 17.

BUFORD COSBY BIRD, M.D., Colquitt, Ga., to Miss Chevis Evans Strong of Montgomery, Ala., June 17.

LEWIS A. BUCHMAN, M.D., Canton, Ohio, to Miss Molly Jane Reed of North Industry, Ohio, June 1.

WILLIAM LEMUEL BENEDICT, M.D., Fresno, Cal., to Miss Edith H. Betz of Adrian, Mich., June 2.

JOHN PARKER LOUDON, M.D., to Miss Florence Ellen Jones, both of North Yakima, Wash., June 4.

LEWIS JOHN POLLOCK, M.D., Chicago, to Miss Katherine Percy of Galesburg, Ill., June 6.

JAMES B. LOWRY, M.D., Atlanta, Ga., to Miss Mertie I. Gracy of Lakeland, Fla., May 11.

HOWARD RISK, M.D., Waverly, Ia., to Miss Letha Margaret Kint of Oelwein, Iowa, June 3.

H. H. HORNBECK, M.D., to Miss Ora Stanford, both of Kingston, Okla., May 23.

ARNOLD GARLITZ, M.D., St. Louis, to Miss Elsie Sureth of Wilmette, Ill., June 2.

Deaths

William F. Robeson, M.D. University of Pennsylvania, Philadelphia, 1885; a member of the Medical Society of the State of Pennsylvania; and an ophthalmologist of high rank; formerly president of the Allegheny County Medical Association; ophthalmic surgeon to the Pittsburgh Eye and Ear Hospital, Mercy Hospital, Children's Hospital and Pittsburgh Hospital; ophthalmologist to the Western Pennsylvania Institution for the Blind; oculist for the Pennsylvania, Baltimore and Ohio, and Pittsburgh and Lake Erie railroads; formerly surgeon of the Eighteenth Infantry, N.G., Pa.; died at his home in Pittsburgh, June 3, aged 50.

James Augustus Blake, M.D. Albany, N. Y., Medical College, 1868; College of Physicians and Surgeons in the city of New York, 1869; of Brooklyn; a member of the Medical Society of the State of New York; and a specialist in diseases of the eye, ear, nose and throat; formerly a member of the staff of Charity Hospital, and Manhattan Eye and Ear Hospital, New York City, and the Methodist Episcopal Hospital, Bedford Dispensary and Hospital, and Brooklyn Eye and Ear Hospital; died at his home in Brooklyn, June 9, from cerebral hemorrhage, aged 71.

Dan Millikin, M.D. Miami Medical College, Cincinnati, 1875; a member and once president of the Ohio State Medical Association; formerly professor of materia medica and medical jurisprudence in his Alma Mater; prominent as a physician and writer of Ohio; president of the Hamilton Board of Education; died at his home in Hamilton, June 5, from arteriosclerosis, aged 69.

D. Winton Dunn, M.D. American Medical College, Eclectic, St. Louis, 1890; formerly mayor of Duquoin, Ill.; while alone in his office in Duquoin, June 6, was shot by a coal miner who owed him a bill, and whose child he is said to have refused to treat on that account. Dr. Dunn was taken to St. Louis on a special train, but died from his injuries, June 7, aged 62.

William C. Gilmour, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1882; of Oakland, Ore.; died at his home in that city, May 9, from heart disease, aged 54.

Leland Madden Baker, M.D. Boston University School of Medicine, 1894; died at his home in Lynn, Mass., May 27, from nephritis, aged 45.

George Dallas Nutt, M.D. University of Pennsylvania, Philadelphia, 1869; a prominent citizen of Williamsport, Pa.; one of the organizers of the Williamsport Hospital, and of the Williamsport Private Hospital; for many years dean of the post-graduate school connected with the institution; a Fellow of the American Medical Association; died at his home, May 30, aged 69. The Lycoming County Medical Society at a special meeting, decided to take action on the death of Dr. Nutt, and to attend his funeral on foot in a body.

Amos Lawrence Mason, M.D. Harvard Medical School, 1872; a member of the Massachusetts Medical Society; for twenty years senior physician at the Boston City Hospital; formerly assistant professor, and professor in his Alma Mater; an authority on contagious diseases; and one of the most prominent practitioners of Boston; died suddenly at Menand's, near Albany, N. Y., June 5, from heart disease, aged 72.

Burchard H. Roark, M.D. Rush Medical College, 1903; a Fellow of the American Medical Association, and county physician of Spokane, Wash.; a veteran of the Spanish-American War; while attempting to cross the track of an electric railway near Coeur d'Alene, Ida., in his motor car, May 30, was struck by a train and instantly killed, aged 37.

William L. Grant, M.D. Jefferson Medical College, 1856; surgeon of volunteers during the Civil War; and one of the members of the Wheeling Convention which laid the plans for the State of West Virginia, and also a member of the second convention, which completed those plans; died at his home in Grafton, W. Va., June 2, aged 92.

Francis Bishop Harrington, M.D. Harvard Medical School, 1881; a Fellow of the American Medical Association and American Surgical Association; for many years chief surgeon to the Massachusetts General Hospital; lecturer on surgery at Harvard Medical School; died at his home in Brookline, Mass., June 8, aged 60.

Eugene A. Wheeler, M.D. Denver College of Medicine, 1893; a Fellow of the American Medical Association; surgeon to the L. V. and T. Railroad, and to St. Mary's Hospital, Goldfield, Nev., aged 47; while returning from a meeting in Tonopah, Nev., June 9, was instantly killed by the overturning of his automobile.

Frank Delmont Humphrey, M.D. University of Iowa College of Homeopathic Medicine, Iowa City, 1891; died at his home in Baker, Oregon, May 19, from nephritis, aged 50.

William Justus Jones, M.D. McGill University, Montreal, 1856; one of the oldest and best-known practitioners of Ontario; died at his home in Prescott, May 19, aged 81.

Battle Clark, M.D. Physio-Medical College of Indiana, Indianapolis, 1893; died at his home in New Haven, Ind., May 28, from malignant disease, aged 60.

Robert R. Norris, M.D. University of Maryland, Baltimore, 1878; for thirty years a practitioner at Parkton, Md.; died at his home in that city, May 23, aged 63.

Bernard St. Elmo Ryan, M.D. University of the South Sewanee, Tenn., 1908; died at his home in Philomont, Va., May 25, from heart disease, aged 38.

John A. Jeffries (license, Illinois, 1878). For half a century a practitioner of Rinard, Ill.; died at his home in St. Louis, May 26, aged 80.

George R. Snyder, M.D. Jenner Medical College, Chicago, 1907; of New York City; died in a hospital in San Antonio, Texas, May 25, aged 40.

Charles Murray, M.D. Philadelphia University of Medicine and Surgery, 1864; died at his home in Edwards, N. Y., May 25, aged 82.

Emma J. Roberts, M.D. Minneapolis College of Physicians and Surgeons, 1901; died at her home in Chicago, May 24, aged 48.

William H. Ribble, M.D. New York University, New York City, 1859; died at his home in Wytheville, Va., May 21, aged 79.

Elisha L. Day, M.D. Tulane University, New Orleans, 1872; died at his home in Dallas, Texas, May 24, aged 63.

Edward Joseph O'Brien, M.D. Rush Medical College, 1906; of Chicago; died in West Baden, Ind., June 5, aged 34.

John O. Eberhard, M.D. Jefferson Medical College, 1873; died at his home in Philadelphia, May 29, aged 63.

Frank Love Kiley, M.D. Jefferson Medical College, 1893; of Philadelphia; died about May 22, aged 45.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

POLLUTING THE STREAM AT ITS SOURCE

From day to day, the physician is a recipient, either willing or unwilling, according to his time and ability, of a free postgraduate course in therapeutics. First in importance comes the detail man with his well-memorized "story." Then the doctor is invited to hang on his office walls a host of multicolored advertising posters. He is deluged with enough advertising blotters to absorb an ocean of ink. Through the mails come pamphlets, packages and writeups by men who were failures as physicians. When at last the doctor dies, the unwitting distributors of the literature continue to deluge his home and family with drugs and advertisements until time has worn his name from every medical directory and distributing agent's list.

Physicians, of course, know all this. They may not know, however, that the student, before his graduation, is initiated into this proprietary educational system. It is true that this early appeal is also diminishing. But as proof that a few manufacturers still continue the methods, witness the following correspondence:

"*To the Editor:*—I enclose two letters which I have received recently. They are the most impudent of the many with which I have been deluged. It seems that their scheme of offering the president or secretary of the graduating class a commission is successful sometimes, for several of these patent medicine houses have written as an encouragement, that at such and such a medical school the president had cleared $40 on the proposition, etc. From this, and from the cool effrontery with which these houses write, it seems that the students of a number of medical schools are not enlightened on the subject of proprietary medicines. This is a serious reflection on their teachers and emphasizes the importance of teaching the social and ethical, as well as the scientific aspects of medicine. There is very little of such instruction at present.

"ERNST BOAS,
"Secretary Senior Class, Columbia University, College of Physicians and Surgeons."

Enclosed with the foregoing were the following letters:

"Secretary Senior Class, Dept. of Medicine.
"Dear Doctor:

"It has been our practice for a great many years, in January, to furnish all Seniors and members of graduating medical classes with one of our regular $1.00 Outfits, containing an *improved oil Nebulizer*, a *Pipet* and *bottle* of *Pineoleum* (formula in upper left hand corner of this letter-head) without cost and *with our compliments.*

"It is also our practice to pay each Secretary or President (whoever makes the distribution) five cents for each receipt furnished us, giving the full name and home address of each member of the class and the faculty, thereby showing that he has delivered to each, one of our Outfits. We ship the goods by prepaid express to the College and when the receipts showing the deliveries, have been returned we forward our check as per the above.

"If you will kindly give us an immediate reply (in the enclosed stamped envelope) indicating whether or not you will attend to the matter for us and informing us of the number of men in the graduating class and faculty, we will at once take up the matter with you further.

"Very truly yours,
"THE PINEOLEUM COMPANY."

"Secretary, Senior Class, Columbia University College of Physicians and Surgeons.
"Dear Doctor:

"It is our intention to present each of the members of the senior class with a copy of our 400 page cloth bound library edition price-list containing a section on clinical suggestion which should make it of interest and value to each of them. With the list we shall include a sample copy of the *American Journal of Clinical Medicine* and our recent issue of 'Helpful Hints for the Busy Doctor,' both of which are of undoubted interest and value.

"So that we may continue mailing our 'Helpful Hints' from time to time, we desire the names and permanent home addresses of each member of the senior class and if you will furnish us with this information we shall present you or the student whom you may select to compile the list and distribute the samples, a 12-vial emergency case filled with active principles suitable for this class of practice.

"On receipt of the list of names we shall forward the above mentioned printed matter by prepaid delivery to either yourself or the student appointed.

"Assuring you of our appreciation of any courtesy you may show us, and of our desire to reciprocate in any way possible, we are, with regards,

"Very truly yours,

"FRANK B. KIRBY, M.D.,

"The Abbott Alkaloidal Company, Department of Sales.

"P. S. We have interesting proposition whereby a live-wire student, preferably in the senior class, can make some money with but little effort and with no loss of time."

The way to get rid of these attempts to debauch the young graduate is indicated in our correspondent's words: "It seems that the students of a number of medical schools are not enlightened on the subject of proprietary medicines." There is need in every school not only of an intensive course in what is worthy and efficient but also of demonstrations and lectures on proprietary methods and "What Not To Prescribe."

CONVICTIONS UNDER THE FOOD AND DRUGS ACT

BEEF, WINE AND COCA

Warren Sutliff, G. W. Case, J. Weinkauff and Ensley J. Case, who did business under the firm name of Sutliff, Case & Co., Peoria, Illinois, shipped in interstate commerce a quantity of so-called beef, wine and coca. According to the label, the product contained alcohol 15 per cent. and cocain 1/5 of a grain to each fluid ounce. When analyzed by the government chemists, the stuff was found to contain not 15 per cent. of alcohol, but 23.75 per cent. It was, accordingly, declared misbranded. The defendants pleaded guilty to the charge and were fined $10 and costs.—[*Notice of Judgment No. 2213.*]

MALT NUTRINE

The Anheuser-Busch Brewing Association sold, in violation of the Food and Drugs Act, a quantity of "Malt Nutrine," which the government officials declared was misbranded. The label bore such claims as:

"Alterative, Nutritive, Tonic, Strengthening, Invigorating, Sedative."
"A Non-intoxicant Sparkling Concentrated Liquid Extract of Malt and Hops."
"Makes Blood and tissue. Aids digestion. Lends strength to the weak. Triumphs over disease. Nourishes the convalescent."
"Rests the brain and quiets the nerves. It is invaluable to nursing mothers. Nothing like it for teething children. Enriches the blood and builds up the system."
"A concentrated extract of Malt of Acknowledged Merit."

The label was declared misleading and false in that the claim "highly concentrated extract of malt" signified that the product was a pure extract of malt concentrated, when analysis proved that it was not, but consisted of other ingredients than malt, to wit: Alcohol, 1.6 per cent., and extractive matters from hops. The company pleaded guilty and a fine of $50 was imposed.—[*Notice of Judgment No. 2310.*]

MANADNOCK LITHIA SPRING WATER

S. A. Scammon of Temple, N. H., shipped in interstate commerce a quantity of Manadnock Lithia Spring Water. Some of the claims made for this product were:

"The most wonderful natural Lithia Spring water now known in the world."
"Recommended for Gout, Dyspepsia, Rheumatism, Eczema, Sugar Diabetes, Bright's Disease, Gall Stones; also reduces temperature in all fevers; and all diseases of the kidneys, asthma, etc."
"As beautifier of the complexion, it has no equal."

This so-called lithia water was declared misbranded, as it contained only an unweighable trace of lithium and not enough to warrant the water being classed as a lithia water. Scammon entered a plea of *nolo contendere* and was fined $15.—[*Notice of Judgment No. 2814.*]

BUCKHORN LITHIA WATER

A quantity of "Buckhorn Lithia Water" was shipped by a company of the same name from Henderson, N. C., into Georgia. The labels on this product contained the following statements:

"This water has the highest scientific endorsement as a cure for catarrh of stomach or bowels, constipation and indigestion."
"Beneficial in all fevers, especially typhoid."
"It gives the quickest relief in all uric acid troubles, thick or discolored urine, stone in bladder, pain in urinating."
"It cures kidney and bladder troubles, sciatica, rheumatism and gout."

The water was declared misbranded by the federal authorities, first, because of the false statements regarding curative effect, and, second, because while called a lithia water, it did not in fact contain enough lithium to give the therapeutic effect of lithia water. The company pleaded guilty and the court suspended sentence on payment of costs.—[*Notice of Judgment No. 2709.*]

SUN-RAY SPARKING WATER

"Sun-Ray Sparking" was a water claimed to be "the world's purest spring water," marketed by the Sun-Ray Water Company of Ellenville, N. Y. The label bore a picture of a stream of water flowing out of a tunnel, and under the picture was the description, "Famous Sun-Ray Spring Tunnel, Ellenville, N. Y." This water was declared misbranded by the federal authorities in that the label indicated that the product was a natural spring water. As a matter of fact, it was water to which sodium chlorid (common salt), sodium bicarbonate (baking soda), and carbon dioxid (carbonic acid gas) had been added. The Sun-Ray Water Company pleaded guilty and was fined $50.—[*Notice of Judgment No. 2481.*]

HICCURA MINERAL WATER

P. F. Panabaker of Omaha, Nebraska, trading under the name "Hiccura Mineral Water Company," shipped in interstate commerce, a quantity of mineral water which the federal authorities declared misbranded. The following claims were made for the stuff:

"Natural Mineral Water."
"Pure Natural Remedy."
"Hiccura Mineral Water is the strongest and most perfect of Natural Waters."

The federal authorities declared the water misbranded in that the "Hiccura Mineral Water" was not a "natural" water, but an artificial mineral water, containing ferric sulphate, 84 grams per liter, and aluminium sulphate 21 grams per liter. Panabaker pleaded guilty and was fined $15 and costs. [*Notice of Judgment No. 2380.*]

Association News

CLINICAL INFORMATION BUREAU IN NEW YORK

Fellows of the American Medical Association and other visiting physicians will be cordially welcomed at the clinics which are daily held in the hospitals of New York City. An information bureau has been established in the New York Academy of Medicine. The details of about fifty operative clinics are posted there daily.

Propaganda in the Public Schools against Medical Frauds.—A unique method of propaganda against patent medicines and medical frauds has been inaugurated in the high schools at La Fayette, Ind. An effort is being made to inform the pupils, and through them the families from which they come, regarding various medical frauds. The plan was originated by Professor Pierson of the department of physiology. Pupils were requested to bring to school all newspaper advertisements of patent medicines and "quack" doctors. The iniquity of this form of advertising and the absurdity of the claims of the patent-medicine men and the "quack" doctors were explained to them. Great enthusiasm was shown and literature concerning the subject was gathered by the students in physicians' offices and elsewhere. Special attention was drawn to the dangers of medicines containing habit-forming drugs. This novel method should be highly effective in teaching the public the evils of patent medicine and quackery.—Correspondence, *Indiana State Med. Jour.*

Correspondence

Sudden Blanching of the Hair

To the Editor:—In an editorial in THE JOURNAL, May 30, 1914, p. 1726, on the growth and color changes of the hair, sudden blanching of the hair is put down as "mythical," and Stieda's views are accepted that the hairs turn gray only as new hairs without pigment grow. "No sudden mutations are found when accurate observations are instituted."

Stieda's reasoning to my mind is not convincing, and I believe that with our ignorance of the factors controlling pigment formation in the skin we are in no position to dogmatize on this subject—certainly in no position to cast aside as unreliable cases because they do not square with our present notions. Most of the recorded cases of this sort are old, but we are not the first generation of reliable observers, and it does not require modern instruments of precision to make a diagnosis of gray hair. I would offer in evidence on this point one modern case, which so far as I know has not appeared in the literature of this subject. It is the following:

"Perhaps you will allow me to digress for a moment to mention to you a very remarkable illustration of the latter fact—increased pigmentation in the vicinity of its diminution. I have mentioned the case elsewhere, but it will probably be new to you. It is that of a man who had traumatic meningeal hemorrhage over the left hemisphere. As a result of this, during the three days he lived after the injury, the right, opposite half of the hair of his head and of his brown moustache and beard became blanched so as to be almost white. The change was watched during life and carefully noted after death. It was like that which has been described as the result of profound emotion, but it was due here to a physical agency. It can only be explained by assuming that the disordered innervation so changed the secretion at the roots of the hair as to produce a material capable of ascending the hairs and discharging their pigment. But after death we noticed another thing, which leads me to mention the case. The very gray, almost white, right half of the beard was separated from the brown left half by a narrow vertical line, or narrow zone, in the middle line, in which the hair had become almost black. Apparently where the disordered influence ceased in its extreme degree, at the blending of the innervation of the two sides, a change in the pigmentary process had occurred of the opposite character. Mysterious as the fact is, and perhaps impossible to explain, it illustrates the close relation between the plus and the minus in pigmentary processes." (Clinical Lectures, by Sir William Gowers, M.D., F.R.S., 1904, p. 153.)

One positive fact of this sort will of course knock down a whole theory based on negative reasoning, and I do not believe that this case can be brushed aside as a myth. Sir William Gowers is not an ancient; he belongs in the forefront of modern neurology—certainly a field whose workers are trained to guard against deceptions—and he has standing as a clinical observer.

"The change was watched during life and carefully noted after death"; and not only that, but hyperpigmentation of bordering hair occurred.

In the face of this observation—leaving all others out of consideration—I believe we are compelled to accept the fact that sudden blanching of the hair may occur. And I am aware of nothing that makes the acceptance of this observation a shock to our knowledge of skin pigment. As a matter of fact, sudden macroscopic changes in the skin's pigment—and the hair's pigment is the same—are not excessively rare observations. As recently as the May meeting, this year, of the American Dermatological Association, Hazen of Washington referred to the sudden appearance of patches of leukoderma in a negro ill in hospital under constant observation; in this case patches of white skin appeared on the abdomen within thirty-six hours. Carmichael mentioned a similar case. How such a change could occur we are at a total loss to explain; but that has nothing to do with the fact.

WILLIAM ALLEN PUSEY, M.D., Chicago.

Preventive Inoculations for Typhoid

To the Editor:—In the Current Comment on "Typhoid Prevention among Seamen" (THE JOURNAL, May 16, 1914, p. 1563), the following statement is made: "So far, preventive inoculations for typhoid have been used only in military and naval circles and in hospital work among physicians and nurses. The results have been so favorable that it would seem to be time to secure the introduction of the practice of typhoid immunization to the public." It may interest you to know that the North Carolina State Board of Health has been providing free typhoid vaccine since early in January of this year, and that as whole-time county health officer for Sampson County, I have since January 16 given free preventive inoculation to 258 persons, mostly white, with a few negroes, both sexes, ages ranging from 4 to 61 years, from almost every walk in life. I have many engagements to continue the work on through the summer, and at the end of the year I expect to have some valuable data on the subject. I am not writing this as a criticism, but simply to report the activity going on in an obscure rural county.

G. M. COOPER, M.D., Clinton, N. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SPAHLINGER TREATMENT OF TUBERCULOSIS

To the Editor:—Do you know anything about the new cure for tuberculosis as described by Henry Spahlinger to the Academy of Medicine, Paris, April 28, to be a mixture of antigens and ferments?

W. W. DILL, M.D., Redlands, Cal.

ANSWER.—The *Bulletin de l'Académie de médecine,* May 4, 1914, gives the following statement:

"PRESENTATION OF MANUSCRIPTS AND PRINTED WORKS

"M. LETULLE: I have the honor to present a preliminary note entitled 'The Treatment of Tuberculosis by the Method of Henry Spahlinger,' addressed to the academy by Dr. Edmond Lardy of Geneva, Dr. Colbeck, physician of the Hospital of the City of London for Diseases of the Chest, and Dr. L. Williams, physician of the French hospital in London.

"The method consists of a series of intramuscular injections of a combination of tuberculous antigens and ferments. This specific treatment is reinforced by an adjuvant treatment consisting of ferments combined with lipoids which are administered intramuscularly or intravenously. In fifty-four cases of pulmonary tuberculosis, all of the open variety treated for some months by this method, seventeen at the present time have shown marked amelioration. The signs of ulceration have disappeared and bacilli no longer exist in the sputum and there is continuous apyrexia.

"Before treating human tuberculosis, H. Spahlinger had, furthermore, obtained remarkable success experimentally on tuberculous guinea-pigs. More than twenty recoveries led him to make his first trials on man. (Assigned to M. Letulle for examination.)"

The statement given in the preceding quotation must be regarded merely as the claims of the author of the treatment.—ED.

RAYMOND'S PECTORAL PLASTERS—SETON FOR MIGRAINE—ACTION OF ACETANILID, ANTIPYRIN AND PHENACETIN —SCOPOLAMIN ADDICTION

To the Editor:—1. Please inform me as to the composition or therapeutic action, if any, possessed by Raymond's Pectoral Plasters, which are "guaranteed to cure" whooping-cough. They are made by Raymond & Co., 200 Williams Street, New York City. Has it ever been investigated by THE JOURNAL'S Propaganda for Reform? Please give some information on this "cure" if you can do so, as it is being exploited in this locality not only by druggists, but by physicians as well.

2. What does Osler really mean in his closing statement relative to the treatment of migraine, viz: "And lastly, in obstinate cases, an ordinary tape seton may be inserted through the skin at the back of the neck, to be worn for three months, a plan of treatment which has the strongest possible recommendation from Mr. Whitehead of Manchester (Osler: Practice of Medicine, D. Appleton & Co., Ed. 7, 1911, p. 1068).

Would there not be serious danger of infection or inflammation from leaving the seton in place so long? Is this a safe procedure to try in such cases?

3. Is there any real difference in the action of acetanilid, antipyrin and phenacetin on the central nervous system, other than a difference in the intensity of their action?

4. Is there much danger of acquiring a habit for hyoscin where the drug is being administered continually in doses of from 3/100 to 1/20 grain daily? What is the danger compared with equivalent doses of morphin administered to a male patient 68 years old?

CHESTER DEMAREE, M.D., Trafalgar, Ind.

ANSWER.—1. We have no information as to the composition and action of Raymond's Pectoral Plasters. The advertising matter in our files shows that the plasters are fraudulently exploited. For further information regarding this nostrum, see "Nostrums and Quackery," p. 689, or THE JOURNAL, June 3, 1911, p. 1671, under the head of "Press Clippings and Nostrum Enterprise."

2. We must take the quotation to mean what it says. The introduction of a seton was formerly much used for the purpose of exciting a lasting counterirritation. The seton is applied by drawing a single large thread or a skein of threads through an opening made in the skin. There is, of course, some danger of infection in making such a wound, but if care be taken to have the materials aseptic, the danger of absorption of toxins or spread of the infection would be comparatively slight. The method is, however, scarcely to be recommended, and we notice that Osler has omitted all reference to it from the eighth edition, 1912, of his work on the Practice of Medicine.

3. No.

4. So far as we know, an addiction to scopolamin (hyoscin) has not been observed to any considerable extent. The danger of inducing such a habit would be far less than with morphin. Scopolamin acts more by depressing the motor area than by its effect on the sensory portion of the brain.

REFERENCES TO ABLATIO PLACENTAE

To the Editor:—Please give me some data or references in regard to "Concealed Internal Hemorrhage" or "Ablatio Placentae" named by Holmes.

A. S. ROSE, M.D., Fayetteville, N. C.

ANSWER.—The following is a list of references to the subject:

Holmes, R. W.: Two Cases of Ablatio Placentae, *Am. Jour. Obst.*, 1903, xlviii, 519.

Holmes, R. W.: Ablatio Placentae, A Study Based upon Two Hundred Cases in the Literature, *Am. Jour. Obst.*, December, 1901 (complete bibliography).

De Lee, J. B.: A Case of Fatal Hemorrhagic Diathesis with Premature Detachment of the Placenta, *Am. Jour. Obst.*, December, 1901.

Bubis, J. L.: Hemorrhage from Premature Separation of Normally Situated Placenta, with Report of Cases, *Cleveland Med. Jour.*, July, 1912; abstr. THE JOURNAL, Aug. 24, 1912, p. 677.

Champetier de Ribes and Couvelaire, A.: Treatment of Hemorrhage from Abnormally Situated Placenta, *Ann. de gynéc. et d'obst.*, April, 1911.

Barchet, P.: Premature Separation of Normally Located Placenta with Hemorrhage, *Beitr. z. Geburtsh. u. Gynäk.*, 1912, xvii, No. 2; abstr., THE JOURNAL, July 13, 1912, p. 150.

Wells, W. H.: Partial Detachment of a Normally Situated Placenta —Concealed Intra-Uterine Accidental Hemorrhage, *Therap. Gaz.*, December, 1910.

Fraipont, M.: Rupture of Superficial Layers of Body of Uterus in Case of Premature Separation of Normally Located Placenta, *Ann. de gynéc. et d'obst.*, April, 1914; abstr., THE JOURNAL, June 6, 1914, p. 1847.

FRACASTORIUS ON SYPHILIS

To the Editor:—Will you kindly publish in an early issue the English version of the famous Latin poem of the Italian physician Fracastorius, written in 1530, in which the disease syphilis is first referred to? This poem, now of great historical importance, is not available to the general practitioner, and I think that its publication would be appreciated by the other readers of THE JOURNAL as well as myself.

PAUL E. GREENLEAF, M.D., Bloomington, Ill.

ANSWER.—The celebrated poem of Hieronymus Fracastor is now about four centuries old. To its author is due the credit of having given to this disease the name which has supplanted all others and is to-day in universal use. While the poem is filled with mythological allusions it affords a good clinical description of the symptoms of the disease. It is a version in verse of a small prose treatise published by the author in 1548, entitled "De Contagionibus et Contagiosis Morbis." A translation in prose was issued by the Pilman Company, St. Louis, in 1911, for $2. It is a booklet of fifty pages. In his little essay entitled "An Alabama Student," Sir William Osler gives an account of Fracastorius with extracts from the poem. The great length of the work prevents its complete publication in THE JOURNAL.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, July 14. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, July 7. Sec., Dr. Henry C. De Vighne, Juneau.

ARIZONA: Phoenix, July 7-8. Sec., Dr. John Wix Thomas, Phoenix.

COLORADO: Denver, July 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: New Haven, July 14-15. Sec., Dr. Chas. A. Tuttle, New Haven. Homeopathic: New Haven, July 14. Sec., Dr. Edwin C. M. Hall, New Haven. Eclectic: New Haven, July 14. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

ILLINOIS: Chicago, June 23-25. Sec., Dr. C. St. Clair Drake, Springfield.

INDIANA: Indianapolis, July 14-16. Sec., Dr. W. T. Gott, State House, Indianapolis.

MAINE: Augusta, July 7-8. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, July 14-16. Sec., Dr. Walter P. Bowers, Room 159 State House, Boston.

MONTANA: Helena, June 30-July 2. Sec., Dr. Wm. C. Riddell, Helena.

NEW HAMPSHIRE: Concord, July 1-2. Regent, Mr. H. C. Morrison, Concord.

NEW MEXICO: Santa Fe, July 13. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: June 23-26. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

NORTH DAKOTA: Grand Forks, July 7. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, July 14. Sec., Dr. John W. Duke, Guthrie.

OREGON: Portland, July 7-9. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

RHODE ISLAND: Providence, July 2-3. Sec., Dr. Gardner T. Swarts, State House, Providence.

SOUTH DAKOTA: Deadwood, July 14. Sec., Dr. Park B. Jenkins, Waubay.

TEXAS: Austin, June 23-25. Sec., Dr. W. L. Crosthwait, Waco.

UTAH: Salt Lake City, July 6-7. Sec., G. F. Harding, 405 Templeton Bldg., Salt Lake City.

VERMONT: Burlington, July 14-17. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 23-26. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Seattle, July 7. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WEST VIRGINIA: Elkins, July 1. Sec., Dr. S. L. Jepson, Wheeling.

WISCONSIN: Milwaukee, June 29. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

WYOMING: Laramie, July 9-11. Sec., Dr. H. E. McCollum, Laramie.

Special Preparation for Ophthalmologists

A statement from the University of Minnesota Medical School says that a course for the preparation of specialists in ophthalmology, covering a period of two or three years is to be offered, this course to start July 1, 1914. Opportunity will also be provided for a course in otology, laryngology and rhinology to be taken at the same time. It is planned to grant a suitable degree in ophthalmology at the expiration of the service, provided the work done is satisfactory. The plan provides for a systematic training, covering laboratory branches so far as they are related to ophthalmology, and the intention is to give the student a good foundation in these allied subjects, both laboratory and clinical, including anatomy, physiology, pharmacology, pathology, bacteriology, general medicine, surgery, experimental and clinical, neurology and other clinical branches.

It is the intention thus to broaden the foundation of the student undertaking these specialties. During this period he will have opportunity for such work as is required clinically in eye, ear, nose and throat. It is expected that this course will prepare the student more quickly and in a better manner in subjects related to ophthalmology than would be the case were the physician to enter on a long period of general practice in which he is obliged to do much work which later will be of little or no value in the practice of his specialty. There is one teaching fellowship offered of $500 for the first year, and it is expected that the amount of the fellowship will be somewhat larger for the second year of service.

Maine March Report

Dr. Frank W. Searle, secretary of the Maine Board of Registration of Medicine, reports the written examination

held at Portland, March 10-11, 1914. The number of subjects examined in was 10; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 16, of whom 13 passed and 3 failed. Five candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
George Washington University	(1912)	87
Medical School of Maine	(1913)	78
Baltimore Medical College	(1913)	79
College of Physicians and Surgeons, Baltimore	(1912)	77
College of Physicians and Surgeons, Boston	(1912)	76
Harvard University	(1893) 81; (1900) 88; (1909)	93
Tufts College Medical School	(1912) 77; (1913)	80
Jefferson Medical College	(1913)	91
University of Vermont	(1913)	84
McGill University	(1901)	84

FAILED

Coll. of Phys. and Surgs., Boston	(1909) 71; (1911) 72; (1912)	63

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Colorado	(1913)	Colorado
Chicago College of Medicine and Surgery	(1913)	Illinois
Tufts College Medical School	(1894)	Texas
University of Vermont	(1907) Vermont; (1912)	Vermont

California Reciprocity Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports that 39 candidates were licensed through reciprocity and 1 by motion of the board, Dec. 8-10, 1913. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Coll. of Phys. & Surgs., Los Angeles	(1906) Arizona; (1913)	Wisconsin
Cooper Medical College	(1906)	Oregon
Denver College of Medicine	(1902)	Penna.
University of Colorado	(1896)	Washington
Georgetown University	(1906)	Utah
Chicago Homeopathic Medical College	(1903)	Iowa
Hahnemann Med. Coll. & Hosp., Chi.	(1902) Iowa; (1905)	Illinois
Northwestern University	(1908) Illinois; (1912)	Illinois
Rush Medical College	(1909)	Illinois
University of Illinois	(1912)	Arizona
Keokuk Medical College	(1905)	Washington
University of Kansas	(1906)	Missouri
Tulane University	(1910)	Texas
College of Physicians and Surgeons, Baltimore	(1907)	Utah
Johns Hopkins University	(1901) Maryland; (1906) Maryland; (1909) Maryland; (1910) Maryland.	
Southern Homeopathic Medical College	(1904)	Maryland
Harvard University	(1902)	New York
Barnes Medical College	(1893)	Missouri
Beaumont Hospital Medical College	(1897)	New Mexico
Missouri Medical College	(1886)	S. Dakota
Columbia University, College of Phys. and Surgs.	(1907)	New York
Cornell University	(1913)	New York
New York Homeopathic Medical College and Hosp.	(1908)	New York
Cincinnati College of Medicine and Surgery	(1880)	Arizona
Ohio Medical University	(1906)	Ohio
Western Reserve University	(1905)	Mass.
Jefferson Medical College	(1902) Penna.; (1912)	Maine
Medico-Chirurgical College of Philadelphia	(1904)	New Jersey
University of Penna.	(1900) Penna.; (1902)	Penna.
Woman's Med. Coll. of Penna.	(1891) New Jersey (1912)	Penna.

Philippine Islands Report

Dr. C. E. Norris, secretary of the Board of Medical Examiners for the Philippine Islands, reports that 33 physicians were registered during the latter half of 1913. The following colleges were represented:

College	Grad.	Examined
Chicago College of Physicians and Surgeons	(1907)	1
Rush Medical College	(1904)	1
Tulane University	(1907)	1
Grand Rapids Medical College	(1902)	1
St. Louis University	(1905)	1
Jefferson Medical College	(1892)	1
University of the Philippines, Med. Dept.	(1913)	6
University of St. Thomas, Med. Dept.	(1913)	19
University of Strassburg	(1897)	1
Medical School of Kanazawa, Japan	(1910)	1

Book Notices

A Handbook of Useful Drugs. A Selected list of Important Drugs Suggested for the Use of Teachers of Materia Medica and Therapeutics and to Serve as a Basis for the Examination in Therapeutics by State Medical Examining and Licensing Boards. Prepared under the Direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Cloth. Price 50 cents. Pp. 167. Chicago. American Medical Association Press, 1914.

The object of this book, published under the auspices of the Council on Pharmacy and Chemistry, as is well expressed on its title page, is to present "a selected list of important drugs suggested for the use of teachers of materia medica and therapeutics and to serve as a basis for the examination in therapeutics of state medical and examining boards." This object seems to have been achieved. The book is a valuable practical help toward a higher standard for medical therapeutics and medical education. Recognizing the fact that a too large number of drugs is detrimental to therapeutic progress and especially a hindrance to effective medical teaching, a committee of the Council on Medical Education of the American Medical Association prepared a list of the more important drugs in general use and submitted it to the National Federation of State Medical Examining and Licensing Boards with a view to securing the cooperation of that body in largely limiting examination for license to medicaments in this list. The drugs selected by the Council on Pharmacy and Chemistry for this book were chosen from the list described. The drugs are arranged alphabetically. The information given includes a physical and chemical description of the drugs together with their pharmacology, therapeutics, dosage and practical application.

It may be pointed out that the book includes the new and the old. Official drugs whose importance warrants their inclusion have been taken from the United States Pharmacopeia, and their physical and chemical description are in accordance with the official standards; the non-official drugs have been taken from New and Nonofficial Remedies.

Following the main text are tables of solubility, the classification of drugs according to their usage, lists of drugs that may cause eruptions of the skin, discolorations of the urine and feces and drugs that are excreted in the milk. A good index completes the book.

Every student should own a copy of "Useful Drugs" to aid him in bringing scientific laboratory pharmacology to practical application, and to help him to recognize the useless drugs that are still official in the Pharmacopeia, still appear in books on practice, and constantly occur in the medical journals.

Teachers and instructors in practical therapeutics will find the book of great value in the selection of the drugs that their students must be prepared on for hospital and licensing board examinations. The book represents a much-needed advance in therapeutics by tacitly repudiating a large number of useless drugs.

Benzol as a Leucotoxin. Studies on the Degeneration and Regeneration of the Blood and Hematopoietic Organs. By Laurence Selling, M.D. Monographs of the Johns Hopkins Hospital Report, New Series, No. 2. Paper. Price, $1. Pp. 60, with 3 illustrations. Baltimore: Johns Hopkins Press, 1913.

This pamphlet gives an exhaustive review of the action of benzol (benzene, C_6H_6), on the blood-making organs, particularly the bone-marrow and on the different varieties of blood-cells. Benzol is shown to destroy the cells of the bone-marrow until the blood-making tissue becomes aplastic; but the cessation of the injections leads to regeneration in the course of two or three weeks. Examination of the cells in the process of regeneration indicates, according to the authors, the possibility of a conversion of small lymphocytes into large lymphocytes and the further differentiation of the large lymphocytes into granulocytes, erythroblasts and megacaryocytes. The conversion of erythroblasts to erythrocytes is conceived of as a physiologic process consisting in a wandering of the nucleus out of the cells.

Miscellany

The Patent Medicine Problem

An article by M. I. Wilbert (*Jour. Am. Pharm. Assn.*, 1914, iii, 572) discusses the patent-medicine problem from the pharmaceutical point of view and presents a review of some of the opinions expressed and resolutions adopted by members of the American Pharmaceutical Association during the sixty or more years of the existence of that organization.

If resolutions were as potent for good as their proposers would have them to be, the patent-medicine problem would long since have ceased to exist. Even so, however, it is pleasing to learn that pharmacists as a class have consistently opposed quackery and fraud as represented by the nostrum business and have repeatedly gone on record as favoring the degree of publicity necessary to give the purchaser a fair knowledge of the composition of the medicine he is buying. It is interesting to note, for instance, that at the second meeting of the American Pharmaceutical Association the following resolutions were adopted:

Resolved, That the American Pharmaceutical Association believes that the use and sale of secret or quack medicines is wrong in principle and is, in practice, attended with injurious effects to both the profession and the public at large, and believes it to be the duty of every conscientious druggist to discourage their use.

Resolved, That this association earnestly recommend to our pharmaceutical brothers to discourage by every honorable means the use of these nostrums; to refrain from recommending them to their customers; not to use any means of bringing them into public notice; not to manufacture or to have manufactured any medicine the composition of which is not made public, and to use every opportunity of exposing the evils attending their use and the false means which are employed to induce their consumption (*Proc. Am. Pharm. Assn.*, 1853, p. 17).

Three decades later (*Proc. Am. Pharm. Assn.*, 1885, xxxiii, 394), after a somewhat comprehensive study of the problems involved in the sale of patent medicines by retail druggis s, a special committee presented a report including the following expression of opinion:

"All medicines, and articles used as such, concern the health of those who use them and put dependence on them. By action or failure of action, a medicine is liable to prove hurtful when misapplied. Therefore, it is the right of a purchaser of medicine to receive information of its constituents, their names and proportional quantities. And it is a legitimate act of the state—so far as it deems expedient—to see to it that such information, in printed form, is placed on each package of articles of medicines, as a condition of their legal sale.

"Moreover, legislation requiring the composition of medicines to be given to the consumer is entirely in accord with the spirit of the institutions of the United States, because it is legislation tending to make the individual responsible for taking care of himself and tending to secure him in the means of self-preservation. The purchaser of a medicine is provided with a record of its constituents, given in terms defined by published standards: now he may guide himself, in his own discretion, or with professional aid, by the information given in the record of constituents, or he may neglect to so guide himself, and depend on advice given on the wrapper of the medicine, in the exercise of his personal responsibility. The state has done its duty, and given the individual the opportunity for the exercise of discretion. The opportunity has an educational value to the individual."

Thirty years later, at the meeting of the American Pharmaceutical Association in Nashville in 1913, that association appointed a committee to inquire into and report on the problems involved in the patent-medicine business. The "Commission on Proprietary Remedies," as it is called, is to consider the following general propositions:

"1. To inquire into and report to the Council, from time to time, on the general subject of proprietary medicines, in their relation to pharmacy, medicine and the public health.

"2. To inquire whether any of the proprietary medicines, commonly known as patent medicines, contain alcohol or narcotic drugs in sufficient amount to render them liable to create a drug habit, or to satisfy such habits where otherwise created.

"3. To inquire whether, or to what extent, the commonly advertised patent medicines contain potent drugs in sufficient amount to render them dangerous in the hands of the laity.

"4. To inquire into the extent to which patent medicines are fraudulently advertised, or differ in properties or origin from the claims made for them, and the extent to which they are advertised for the cure of diseases generally recognized by the medical science as at present being incurable" (*Jour. Am. Pharm. Assn.*, 1913, ii, 1195).

If, as is to be expected, the present committee pursues its investigation along the lines mapped out by the earlier leaders in American pharmacy, and if it will fearlessly report its findings, the American public and the American medical profession will have secured an efficient ally in the present-day fight to eliminate quackery and fraud in the treatment of diseases.

In the summary of the recent accomplishments attempting to solve the patent-medicine problem, Wilbert expresses the opinion that "the questions involved are not to be considered as being answered until they are answered correctly, and that from the point of view of the public the influence of patent medicines on the health and welfare of the individual is the only factor deserving of consideration. Bearing this latter fact in mind, it would appear desirable that all branches of the drug trade give the patent-medicine problem renewed and serious consideration and make an honest effort to adjust their interests in accord with the interests of the public, and thus effectually counteract the frequently made assertions that the economic questions involved must outweigh all others so far as the drug trade may be concerned."

Drunkenness in Massachusetts

The legislature of Massachusetts in 1913 provided, by resolution, for a commission of five persons to investigate drunkenness in that state. The report of the commission is printed in a pamphlet as House Document 2053. It gives the number of arrests for drunkenness in the state during the previous year, the result of hospital treatment in the state institutions for treating inebriates, and discusses the means and measures for the curtailing of the liquor-habit and the prevention of drunkenness. The commission believes that the state of Massachusetts is not yet ready for state prohibition, but that local option is a good measure. As substitutes for saloons it is thought that meeting-places for men should be provided and that possibly for this purpose greater use could be made of the public-school buildings. Recommendations are made for additional legislation to regulate and control the liquor traffic and, as far as possible, prevent drunkenness, which seems to be on the increase in the state. The report is the logical result of a practical, sensible consideration of the liquor problem.

How to Judge a Doctor

Recently there appeared in the department "How to Keep Well" of the Chicago *Tribune* the following query and a reply, which we believe deserves reprintiing as a guide to the physician himself. The correspondent wrote:

"Some time ago I saw an article in your columns saying that as long as people would patronize an incompetent physician, simply because of his genial manner, they would have themselves to thank for their misfortunes. As far as I can see, the ordinary layman is in no position to judge a physician, and no one in a position to judge will commit himself further than to say that so-and-so is a recognized specialist in his line. How is the layman to judge a general practitioner?"

And the answer was:

"By the judgment and sense he shows in the ordinary affairs of life; by his attendance at hospitals, clinics, medical society meetings; by his standing with other physicians; by the books and journals he reads; by his knowledge of medicine, medical judgment and skill. Some of these items are get-at-able in every case, and all of them in some cases. At the present time the opportunities for popular education on medical subjects are so abundant that the ordinary layman should be able to judge fairly well between the physician who knows his business and the bluffing ignoramus."

Medicolegal

Proof Rendering Roentgenogram Admissible in Evidence

(Prescott & Northwestern Railroad Co. vs. Franks (Ark.), 163 S. W. R. 180)

The Supreme Court of Arkansas says that it is now a well-recognized fact that by the aid of proper apparatus a picture of the bones of the human body may be obtained that will more or less define the skeleton and show any injuries that may have resulted to the bones, or any foreign substance that may be lodged in the body. Therefore roentgenograms are admissible in evidence when proper proof of their accuracy and correctness is produced. In this case the plaintiff (Franks) had suffered a dislocation and fracture of his hip. His attending physician admitted that he had never had any experience in taking roentgenograms but testified that he was present when the photograph in question was taken; that a glass plate was placed under the injured member of the plaintiff, and the Roentgen ray placed over him, and by reflection of the light from the roentgenoscope the negative was made; that he saw it before it was delivered to the photographer to be developed; that the roentgenogram exhibited to the jury was the same as the impression on the glass which he saw just after it was taken. The witness, although he was not a graduate of any medical school, was a practicing physician and surgeon, and had been for fifteen years. His testimony, detailed above, showed that he was present when the picture was taken, and was familiar with the anatomy of the human body. Therefore the court thinks there was sufficient proof of the accuracy and correctness of the photograph, and that there was no error in admitting it in evidence.

Liability of Operating Surgeons for Negligence of Others—Admissibility of Evidence

(Hunner vs. Stevenson et al. (Md.), 89 Atl. R. 418)

The Court of Appeals of Maryland reverses, on the defendant's appeal, a judgment for $1,000 rendered against him, granting him a new trial. The court says that, June 20, the defendant performed an operation on a Mrs. Stevenson which consisted in the removal of the lower third of the right kidney and drainage of an abscess around the kidney lying between the kidney and the bowel. About five weeks afterward Mrs. Stevenson returned to her home, and, September 9, a piece of gauze which had been left in her was removed by her family physician. A week after that some rubberized silk was taken out by Mr. Stevenson, her husband. A "cigarette drain" had been used, which was covered with rubberized silk.

The court reached the conclusion that the appellant (defendant) could not be held responsible for the negligence, if any, of the hospital physicians, nurses, or interns in the dressing of the wound after the operation was performed, if he did not know of, or was not privy to, such negligence, and it was not discoverable by him in the exercise of ordinary care. At this day, when it is well known that there are physicians and surgeons of special skill in particular branches of their profession, it could not safely be announced as a general rule of law, applicable to such cases as this, that a surgeon who performs an operation is liable for the negligence of other physicians, nurses, or interns in hospitals in the after-treatment, unless he specially undertakes such employment. A surgeon may be called many miles from his residence to perform an operation, and, if he is to be held responsible for the negligence of others after the operation, it might mean either that one of special skill would refuse to perform such operations at distant points, or that his charges would be such that no one of moderate means could employ him. It might be detrimental to the public if such a surgeon were required to attend to the after-treatment, as it would be impossible for him to do so and perform many operations. It would be unreasonable to expect one performing operations in half a dozen different hospitals to continue to dress the wounds and have personal charge of the after-treatment in all cases until the patient is discharged from the hospital.

As reflecting on the defendant's right to leave the dressing of the wound to nurses and other attendants in the hospital, the question was relevant whether the postoperative dressing of wounds, as he had described in Mrs. Stevenson's case, was difficult. It was also proper to ask a medical witness what the practice was among reasonably diligent, competent, and skilful surgeons practicing in hospitals with reference to the personal care, after-care, and treatment of the wounds of patients on whom they had operated. As the plaintiffs asserted that pulmonary tuberculosis resulted from the gauze and rubberized silk being left in the wound, it was proper to ask another medical witness to state how, in his judgment, the sinus left from this wound became infected with tuberculosis, and what connection, if any, the tuberculous condition of the sinus had with the operation or subsequent treatment of the case by the defendant. It was proper, too, to let the jury know how long it usually takes such a wound as described in the testimony to heal. The fundamental error in this case was as to the responsibility of a surgeon operating under such conditions as the defendant did.

Presence of Tuberculous Person May be Considered in Awarding Custody of Children

(Kirkland vs. Matthews (Tex.), 162 S. W. R. 375)

The Court of Civil Appeals of Texas reverses a judgment awarding the custody and care of certain minor children, whose mother was dead, to their father, rather than to their aunt, in which one of the points raised was that living in the father's family was his second wife's mother, who was afflicted with tuberculosis. The court says that the aunt offered to prove that a member of the father's family was afflicted with tuberculosis, a contagious and dangerous disease, but this proof was rejected on the father's objection. The purpose in offering proof of this fact was to show that the minors, should they be awarded to their father, would come into close association with one suffering from a dangerous and contagious malady, and that this was a circumstance to be considered in determining whether the best interest of the minors would be subserved by placing their custody with their father. The court thinks that the testimony was admissible on the issue suggested, and that the trial court erred in rejecting it. What is for the best interest of the children is the question of prime importance in cases of this kind, and any evidence showing or tending to show that their welfare would not be best subserved by placing them in the custody of a contending party should be admitted and considered.

Unlawful Practice of Medicine

(Allen vs. State (Okla.), 138 Pac. R. 178)

The Court of Criminal Appeals of Oklahoma says that it is a penal offense under the laws of Oklahoma for any person to practice medicine or surgery in Oklahoma without having at the time a valid unrevoked certificate. An information charging a person with the violation of that provision of the code which penalizes persons for prescribing or administering any drug or medicine now or hereafter included in materia medica in the treatment of disease, injury, or deformity of human beings, must be substantiated by proof of the fact that some such drug or medicine was so prescribed or administered. This prosecution was begun prior to the adoption of the revised laws, for a violation of this provision. A careful reading of the record disclosed that the accused had been administering certain medicines, but no witness named any drug or medicine prescribed or administered by him, nor was there any proof in the record disclosing that any drug or medicine was administered which was included in materia medica, as required. Without doubt the jury should have been instructed, as requested, that the state had failed to introduce evidence sufficient to establish the guilt of the defendant as charged in the information, and they should return a verdict of not guilty.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, ATLANTIC CITY, JUNE 22-26.

American Academy of Medicine, Atlantic City, June 19-21.
American Gastro-Enterological Association, Atlantic City, June 22-23.
American Proctologic Society, Atlantic City, June 22-23.
Montana State Medical Association, Lewistown, July 8-9.
New Jersey Medical Society, Spring Lake, June 29.

AMERICAN GYNECOLOGICAL SOCIETY

Thirty-Ninth Annual Meeting held at Boston, May 19-21, 1914

The President, DR. J. WHITRIDGE WILLIAMS, Baltimore, in the Chair

A list of the newly elected officers was published in THE JOURNAL, June 6, p. 1820.

Forward Fixation of Cervix as Predisposing Cause of Some Retrodeviations of Uterus

DR. EDWARD REYNOLDS, Boston: The supports of the uterus are largely muscular, with the exception of the forward attachments of the cervix. The shortness of the latter forms an essential element in the anteflexion of the cervix. Firm, forward fixation of the cervix, while the fundus is comparatively movable, creates a predisposition to retrodeviations. The release of the forward fixation of the cervix as a preliminary to the performance of the standard operations for the retrodeviations adds greatly to their percentage of success.

DISCUSSION

DR. HERMAN J. BOLDT, New York: Heretofore I have always looked on the shortened, and not infrequently indurated, condition of the sacro-uterine ligaments as being the main factor in causing retroversion of the cervix, and have on a number of occasions cut the shortened ligaments to overcome the backache of which many of these patients complain, several times relieving this symptom. That the holding forward of the fundus is due to the action of the round ligaments is questionable in the greater number of such instances. These ligaments are not taut, except when the bladder and rectum are full. The condition is usually an association of anteflexion of the body of the uterus with a retroversion of the cervix; and unless there be an atrophy of the anterior cervicocorporal junction, the tissue at this junction is unyielding — indurated — and it is impossible to straighten it permanently by manual or mechanical means. Hence the mechanical dysmenorrhea of which many patients frequently complain. The usually present shortened anterior vaginal wall is part of the congenital malformation, and is an additional factor in causing the retroversion of the cervix. I have always regarded the shortened and thickened sacro-uterine ligaments to be a low-grade inflammatory process — a parametritis posterior. Furthermore, when the condition is of long standing and more or less atrophy has taken place in the anterior part of the cervix at the flexion angle, because of long duration and not infrequently increased size of the body of the uterus, the organ cannot straighten itself by any physiologic factor brought to bear on it. We may see the uterus assume a position farther backward in the pelvis, thus constituting a retroposition; and then the intra-abdominal pressure may cause a still more acute flexion angle.

DR. HENRY T. BYFORD, Chicago: I have in many cases separated the bladder from the uterus through a transverse incision and have drawn the parts together from the side to the median line, with the idea that I was getting support in front of the cervix which would hold it back more.

DR. I. S. STONE, Washington, D. C.: The Mackenrodt fixation operation for retroversion will answer the same purpose and overcome permanently the retroversion.

DR. J. WESLEY BOVÉE, Washington D. C.: In certain anomalies of development there is an abnormally high attachment of the uterosacral ligaments to the cervix and an abnormally low attachment of the anterior wall of the vagina. These defects may be remedied by severing the anterior wall from the cervix, attaching it at a higher point and severing the uterosacral ligament from the cervix and attaching it to the lower point, thus giving stronger posterior leverage on the posterior wall of the uterus.

DR. JAMES R. GOODALL, Montreal: The type of acute anteflexion of the uterus and the type of retroflexion are two distinct types which cannot be considered as belonging to one class. For instance, if we take young girls who complain of severe dysmenorrhea, we find associated conditions of the vagina and pelvis. Associated with an acute anteflexion of the uterus there is a short anterior lip of the cervix and a long posterior lip. That type of uterus when removed from the body and held by the cervix cannot be undone. The anterior uterine wall is very fibrous in part and it is a type of uterus which seldom, if ever, becomes retroverted or retroflexed. In the other type of case, in which retroversion and retroflexion take place, there is a lack of tone and a tendency to enteroptosis even before pregnancy has taken place, and with that type of uterus the fundus can be flopped about in very few hours after death.

DR. EDWARD REYNOLDS: There is a distinction between these two classes of retroverted and anteflexed uteri. Retroversion seldom occurs in the class in which the anterior wall at the angle of flexion is hard and firm. When we think that the cervix is the cause of the mechanical dysmenorrhea, release of the anterior fixation and posterior discission will straighten the uterus.

An Internal Alexander Operation

This paper, by DR. HENRY T. BYFORD, Chicago, will appear in full in THE JOURNAL.

Effect of Laparotomy on the Circulation

DR. W. D. GATCH, Indianapolis: In a series of experiments carried out on dogs, I took simultaneous tracings of the intrathoracic pressure of the intra-abdominal pressure, of the pressure in the inferior vena cava, and of the general blood-pressure. I raised the intra-abdominal pressure by injecting warm salt solution into the peritoneal cavity. The tracings showed that the intra-abdominal pressure and the pressure in the inferior vena cava were always equal and rose and fell together. When the intra-abdominal pressure is elevated until it is higher than the blood-pressure, the circulation through the abdomen is abolished, the abdominal viscera being found bloodless at necropsy. The chief and essential cause which propels the blood through the abdominal organs is the beat of the heart. The well-known fact that pressure on the abdomen increases the output from the inferior vena cava is not evidence against this view, because such increase is not maintained unless the circulation is greatly depressed. The absence of valves in the abdominal veins prevents any variations in intra-abdominal pressure due to movements of the abdominal walls from pumping the blood toward the thorax with any degree of efficiency, because as soon as the pressure is released there is a regurgitation. That the heart alone is capable of keeping up the abdominal circulation is proved by experiments.

The effect of anesthesia so deep as to abolish completely the tone of the abdominal wall is to promote the accumulation of blood in the abdomen and limbs, and not uncommonly causes a failure of the circulation during and after operation. It is fortunate that laparotomy is nearly always performed with the patient either in the horizontal or in the Trendelenburg position, for if it were usually done with the patient deeply anesthetized and in the feet-down posture, many more fatalities would occur. Operations both on animals and on man are much better borne under an anesthesia so light as to preserve the tone of the muscles. This is the reason why there is much less so-called shock under nitrous oxid-oxygen anesthesia than under anesthesia due to more powerful agents.

Treatment of Procidentia of Uterus by Interposition Operation

DR. THOMAS J. WATKINS, Chicago: Vesico-uterine transposition should be made before much protrusion through the vaginal orifice results, as the prolapse rapidly increases after

this has taken place; the more the prolapse, the greater the dangers of recurrences following the operation. Vesicouterine transposition cures cystocele, the most important pathologic feature. An occasional recurrence of the uterine prolapse will occur, except in cases in which the vaginal canal can be practically obliterated. This recurrence, however, is not serious, as it can be easily remedied. The operative technic should be adapted to each individual case.

End-Results of Interposition of the Uterus

DR. JOHN OSBORN POLAK, Brooklyn: Interposition operations should be limited to women at or past the menopause, with a relatively small uterus, and when the procedure is elected in those still menstruating, sterilization by tubal ligation should be done at the time of operation. The cases of prolapse in which sliding takes place in the postpubic cleavage plane are not corrected by this procedure. The morbidity is wholly due to technical defects, namely, improper preparation and imperfect hemostasis, vesical injury, etc. In anteverting the uterus the anterior wall of the uterus should rest on the fascial plate just behind the pubis; the fundus should not be brought under the arch, as excessive anterior displacement not only favors recurrence, but anteflexes the uterus and interferes with drainage. The curettings from uteri about to be transposed should always be examined, as degeneration may occur, and hysterectomy is easy after this operation.

(To be continued)

AMERICAN DERMATOLOGICAL ASSOCIATION

Thirty-Eighth Annual Meeting, held in Chicago, May 14-16, 1914

(Concluded from page 1921)

External Vaccine Therapy

DR. HARVEY P. TOWLE, Boston: The results of the tentative experiments with external vaccine therapy were so encouraging in the Massachusetts General Hospital in 1912 that the method has been used with constantly increasing frequency. The present paper is based on the personal observation of more than a hundred and fifty private patients in whom vaccine was used externally. The indications are that external vaccine therapy is most efficient in the treatment of the acute inflammation of infectious disease whose seat is superficial and therefore easily reached from without. Of all infectious processes the staphylococcic is the most easily influenced by external vaccine therapy, and in this the resemblance to the internal method is exact. Vaccine injections are never more efficient than in the treatment of furunculosis, but have also been used successfully in cases of acne, sycosis, and with seeming success in psoriasis and also in oily seborrhea of the scalp. The results on the superficially seated lesions of impetigo contagiosa were usually excellent. Tuberculin was also used externally in several cases of lupus vulgaris, with good effect.

DISCUSSION

DR. JOSEPH GRINDON, St. Louis: About three weeks ago I was called to see a case of lupus which had existed for twenty-five years. Various treatments had failed to give more than fair temporary improvement. I thought that perhaps an additional rubbing in of the organism might produce a large output of the antibodies. So I took the Moro ointment, undiluted, and twice a week rubbed it in for five minutes at a time. There was quite a decided improvement, which continued for several weeks. After a month, however, the lesions flared up again, and I then lost track of the patient.

DR. JOSEPH ZEISLER, Chicago: Many cases of impetigo contagiosa have cleared up under my observation with simple treatment in five days. I remember a case of lupus erythematosus in which I performed scarification and applied a little phenol (carbolic acid), and in a week the patient was cured. There are so many different factors entering into the cure of our cases that it is very difficult to draw any conclusions at all. The mechanical element of rubbing grease into a scaly eruption might help some. I admire Dr. Towle's enthusiasm, and do not wish to criticize him.

A Case of Generalized Congenital Keratodermia

DR. FREDERICK S. BURNS, Boston: The patient whose case I shall report was 16 years of age. The dermatosis was generalized, showing special preference for the flexures of the hands, knees and feet, and the face. The type of lesion was that of an abnormal cornification varying from spine-like elements to marked keratotic thickening. Exfoliation was slight. The process extended on the lips, buccal and nasal mucous membrane, presenting on these surfaces a rather dry superficial thickening that closely resembled leukoplakia. The corneas were thickened and uneven, and surrounded by enlarged blood-vessels which also infiltrated the cornea. The intrinsic tissues of the eyes were unaffected. Deafness was total. The Wassermann was negative. The mucous membrane lesions were unusual, and those of the eyes and ears extremely rare.

DISCUSSION

DR. JOSEPH GRINDON, St. Louis: I am glad that Dr. Burns has once more called attention to the distinction between hyperkeratosis congenita and ichthyosis. So far as I am acquainted with the conditions, there is no such thing as congenital ichthyosis; that is, it is never present at birth, although developing in the first and second years of life.

DR. D. W. MONTGOMERY, San Francisco: I should like to ask Dr. Burns if the usual clinical picture does not show that the palms of the hands are old and smooth.

DR. S. POLLITZER, New York: Please differentiate this process from the possibility of an atypical acanthosis.

DR. A. RAVOGLI, Cincinnati: It is difficult for me to understand the difference in these cases between pityriasis rubra pilaris and ichthyosis. In ichthyosis we have the affection on the surface of the epidermis, but the effect does not go inside into the follicles. In this case, according to the pictures passed around, the openings of the hair follicles are all studded with epidermis, and I have always found this condition in pityriasis rubra pilaris. In ichthyosis the palms, soles and nails are very seldom affected in the way described in this case, which suggested pityriasis rubra pilaris.

DR. FREDERICK S. BURNS, Boston: In answer to Dr. Montgomery's question as to the involvement of the palms and soles, the process, as seen at the time when the photographs were taken, does not show the aggravated condition present a year ago. At that time it presented the appearance of pityriasis rubra pilaris or keratosis follicularis. It has been my impression from reading text-books and various papers, and looking over the literature, that there has seemed to be a consensus of opinion, although an artificial one, that the palms, soles, face and scalp are not usually affected in ichthyosis vulgaris. I do not emphasize that point, because I realize that it is a clinical and artificial distinction. The existence of a greater degree of inflammatory infiltration in the papillary layer of the skin in cases of ichthyosis vulgaris, however, is very common. In my case such changes were entirely absent; but there was a slight hypervascularity, which may help to explain the underlying erythema, and that may be a part of the acanthosis hyperkeratosis having to do with the deformity of the skin.

Regarding Dr. Pollitzer's question with reference to acanthosis, the clinical symptoms presented no pigmentation.

I wish to lay special emphasis on the unusual involvement of the mucous membranes and the organs of special sense, because there seemed little doubt, after consultation with the various specialists who concerned themselves with the examination of the eyes and ears, that the condition of the skin was contiguous with any part of the process having to do with the dermatosis.

Report of a Case of Colloid Degeneration of the Skin

DR. MILTON B. HARTZELL, Philadelphia: From a study of one typical case occurring in a man, aged 43, I am convinced that colloid degeneration of the skin of the type represented by the so-called colloid milium is not a disease of the elastic tissue alone, but affects the collagen and elastin in equal degree. The cells of the epidermis may share in the degeneration, although this is probably infrequent.

DISCUSSION

DR. G. F. FOX, New York: I was convinced that the cases which I reported many years ago as colloid milium were not true cases of colloid degeneration, but similar to a number of cases that had been described. In my cases the tumors looked firm, but were soft, and when dug out of the skin were found to be cystic and removal was followed by an extreme amount of hemorrhage. There was scarcely any cicatrix left after healing.

DR. CHARLES J. WHITE, Boston: The case which I reported some years ago was very different clinically, in that it had very few lesions and decidedly larger ones. Histologically, Dr. Hartzell's patient and my own are extraordinarily similar. My case, however, was much farther advanced than Dr. Hartzell's.

DR. MILTON B. HARTZELL, Philadelphia: It seems to me it is folly to give different names to this one condition. Why not call it degenerative elastin?

Urticaria Pigmentosa, Particularly in Regard to Its Pathology

DR. FRANK CROZER KNOWLES, Philadelphia: I have seen five cases of this disease. It should be dissociated from urticaria, as the course, symptoms and the histologic mast-cell picture are entirely distinctive. A congenital abnormality of the skin has apparently been proved in urticaria pigmentosa by finding abundant mast-cells in the clinically normal skin of these patients. A congenitally abnormal skin is more easily acted on. Some toxin apparently is the cause of this affection, and it probably does not act on normal skin. Its nature and mode of action are unknown.

Personal Observations on Two Thousand Cases of Skin-Disease in the Negro

DR. HENRY H. HAZEN, Washington, D. C.: The skin-diseases more prevalent among negroes than white persons are dermatitis papillaris capilliti, keloids, dry seborrhea, syphilis, tinea tonsurans, urticaria and vitilligo. Alopecia areata, cancer, eczema, erythema, furuncles and boils, angiomas and nevi, *Pediculus capitis* and psoriasis are less prevalent among negroes than among white persons.

Diffuse Erythematous Lupus Treated with Tuberculin

DR. AUGUST RAVOGLI, Cincinnati: My patient, a woman, aged 24, exhibited a typical clinical picture of this disease, with a positive Moro and a negative Wassermann. Local treatment proving ineffective, I resorted to the use of tuberculin T. R., injecting 0.01 mg. into the back. The following day the patient's fever was 104 F., pulse 108, respirations 34. Her face was red and edematous, the eyes closed. In many places an eruption of blisters had formed, leaving extended excoriations discharging serum. Fever continued, ranging from 101 to 105 F., with low delirium, and less than two weeks after the injection the patient died. The clinical diagnosis was acute miliary tuberculosis. A necropsy was refused. I believe that for diagnostic purposes, used locally, tuberculin is safe, but for injection it is dangerous. I am sure that in my case it aroused into acuity a dormant tuberculosis, the patient dying from a tuberculous septicemia. Tuberculin for treatment, even in the smallest dose, is a dangerous remedy.

DISCUSSION

DR. W. A. PUSEY, Chicago: The process which caused the patient's death can only be surmised, but it seems to me we can reasonably conclude that the patient was in a condition of excessive hypersensitiveness to tuberculous toxins. She showed an excessive reaction, giving evidence of acute poisoning within twenty-four hours after the injection. That would exclude the reaction from contaminating infection. The point ought to be made that in a given patient, in a condition of hypersensitiveness, an incredibly small amount of anaphylactic substance produces reaction, and that we are open to these anaphylactic reactions in spite of the most excessive precaution and the greatest skill.

DR. D. W. MONTGOMERY, San Francisco: It occurred to me that this patient might have been tuberculous, and that this process was causing the lupus erythematosus. Therefore, the tuberculin might have excited this toxin into greater activity, and thus caused death. That would be one explanation.

DR. S. POLLITZER, New York: I think it would be a misfortune if, on the basis of this experience and a few others reported, we were to give up so valuable a remedy as tuberculin injections. The present tendency in the use of tuberculin is to give much smaller doses than 0.01 mg. as an initial dose, and if 0.001 or 0.0001 mg. is given, accidents will possibly be avoided. So far nothing has happened from the use of 0.0001 mg. of tuberculin. If the patient bears that well, further injections can be given.

AMERICAN PEDIATRIC SOCIETY

Twenty-Sixth Annual Meeting held in Stockbridge, Mass., May 26-28, 1914

The President, DR. SAMUEL M. C. HAMILL of Philadelphia, in the Chair

A list of the newly elected officers was published in THE JOURNAL, June 6, p. 1820.

Diagnosis of Whooping Cough by the Complement-Deviation Test

DR. ALFRED FRIEDLANDER, Cincinnati: [An account of this work was published in THE JOURNAL, March 28, 1914.]

DISCUSSION

DR. ROWLAND G. FREEMAN, New York: While this work seems promising, there is a general impression that we are still uncertain as to whether we have really found the specific organism of whooping cough. In one laboratory in New York they have been experimenting all winter but with no results.

DR. CHARLES GILMORE KERLEY, New York: Dr. Freeman of London has used the vaccine on 1,134 cases of whooping cough, in doses of two million twice a week. Used in conjunction with the pneumococcus vaccines he felt that the results were good.

DR. SAMUEL S. ADAMS, Washington, D. C.: It seems that the value of this test hinges on the question of its making an early diagnosis of whooping-cough possible. It seems to me that if this test is to be of value we must get the child before there is a distinct history suggestive of whooping-cough.

DR. L. EMMETT HOLT, New York: The close resemblance between influenza and whooping-cough in some instances makes it very desirable to differentiate them bacteriologically. During the past winter we had an epidemic of influenza in the Babies Hospital and took cultures from all the inmates of the institution, and found the influenza organism in a large proportion of the cultures. This close resemblance between whooping-cough and influenza may account for negative results with the test.

Endocarditis in Children

DR. FLOYD M. CRANDALL, New York: It is undoubtedly true that a certain amount of degeneration of the heart muscle occurs during the course of every acute febrile disease or intoxication. It is difficult to believe that in some of the less severe types which run a favorable course any marked degree of myocarditis or pericarditis is present. The probability of grave myocarditis, however, must never be forgotten. Examinations for its detection must be frequent and careful, for on it more than on any other element depends the prognosis and much of the treatment. I have come to rely on four symptoms as particularly suggestive of muscular involvement. The earliest to appear is irregular heart action, and usually this is the most distinctive symptom. Syncope is characteristic of decided myocarditis, particularly in diphtheria. In addition to these two symptoms cyanosis and

precordial distress are very suggestive of muscle involvement. In the later stages the occurrence of cyanosis and edema is of graver significance in children than in adults. It is usually impossible to determine the condition of the heart muscle in a young child unless examination is made during sleep as well as during waking hours. If anemia is found to be marked the prognosis may not be so gloomy, as its relief may mitigate the symptoms. A point of great interest is the occasional rapidity of the development of the physical signs of endocarditis. I have heard a loud endocardial murmur develop in a closely watched child in eighteen hours. Other things being equal, I find it difficult to believe that a loud rasping murmur is not more serious than a soft blowing one. The physician who ignores the gravity of a cardiac murmur and lightly says that the child will grow out of it is taking almost a criminal risk. It is true that some children do change for the better, but the unfortunate opposite has in my experience been the more frequent result. The earlier the primary endocarditis occurs the better is the ultimate prognosis. An aortic lesion is very dangerous in a child, but aortic insufficiency is unfortunately rare in children. Anemia is a contributing factor to weakness and fatty degeneration of the heart muscle. The sources of infection of acute rheumatism are still somewhat uncertain, but the reasons for the removal of the tonsils in a rheumatic child are vastly greater than in any other constitutional type. In the treatment of endocarditis the management of the acute stage has been a comparatively simple matter, resolving itself into rest in bed for at least six weeks or two months. If the heart becomes irregular or too rapid, I insist on continuing the quiet. After the child is out of bed with a murmur many difficult problems present themselves. I am more and more convinced that to maintain the restrictive treatment too long after the preliminary stage is a mistake and may defeat its own object. In regard to the exercise which may be permitted, the action of the heart under exercise is the most reliable guide. In the management of this condition arbitrary rules do harm rather than good. In few other conditions is it more essential that we study the case and treat the patient rather than the disease.

DISCUSSION

DR. HENRY DWIGHT CHAPIN, New York: One feature in connection with these cases is the tendency to acute dilatation under great stress. In young athletes permanent damage is sometimes done. The athletics in our schools are under the charge of a director who is frequently not sufficiently informed in regard to the dangers of undue stress, and the advice of the physician is not sought in regard to matters relating to athletics.

DR. HENRY I. BOWDITCH, Boston: The child with a damaged heart does not have a fair show in life. On close observation it may be seen that family history plays a part in these cases. There are often other cases of endocarditis in the same family, and it is also interesting to note the association with streptococcic infection of the tonsils.

DR. FRITZ B. TALBOT, Boston: If we study the family history of these cases it will be found more often that there are or have been other cases in the same family. The history of a case of endocarditis which I have just seen shows that the sister had rheumatism and endocarditis three weeks before. It seems to me that rest in bed for six weeks or two months is rather too short a time for most cases.

DR. J. P. CROZER GRIFFITH, Philadelphia: It is possible that where there is a certain degree of debility the patient may be kept in bed longer than he should be. These patients may be divided into three classes: (1) A small class where there is absolute failure of compensation; (2) a larger class which responds well to treatment and in which recovery usually follows; (3) a class in which there is a tendency to anemia not yielding readily to treatment. There are heart cases which in spite of arsenic, etc., still remain discouraging.

DR. A. D. BLACKADER, Montreal, Canada: In regard to the effect of rheumatic endocarditis on development, it has been pointed out that growth is dependent on wide arteries and low blood-pressure. A slight endocarditis, by lowering the blood-pressure, favors wider arteries and an increase in growth, and these children may be found to be a little taller than others in the same family. Another point is the advantage of giving small doses of potassium iodid in these cases of endocarditis in children. This drug may be given in small doses for three, four or five weeks after the temperature has become normal. Its effects on acidosis are well known and it is believed to have some effect on the viscosity of the blood. The after-treatment of cases in which endocarditis has developed is a matter of judgment. Children with mild lesions confined to the mitral valve, excepting for the more strenuous exercises, should be permitted to develop the heart during the period of general development.

DR. I. A. ABT, Chicago: Aortic lesions in children are not as rare as has been supposed. I have seen an increasing number of cases. In these children with murmurs, where there is a slight temporary dilatation after exercise, what should one do? It is very difficult to keep a boy in this condition in bed. No absolute rule can be laid down. It is a question of the individual case.

DR. ROWLAND G. FREEMAN, New York: No one has spoken of the value of the Roentgen ray in these cases of endocarditis. When a child shows an improvement in symptoms he should be subjected to roentgenoscopy. In one case coming under my observation the child seemed to be gaining, and showing an improvement, it was allowed to get up. Roentgenoscopy showed the condition to be worse than when the first picture was taken. In the management of these cases one should be controlled more by the Roentgen ray than by the clinical examination.

DR. D. J. MILTON MILLER, Atlantic City, N. J.: There are a small number of cases of adventitious murmurs not due to endocarditis, but which are exceedingly difficult to diagnose. These cases are sometimes let go without treatment and sometimes disastrously. In endocarditis in children small doses of morphin are valuable and especially so in cases in which there is nervousness or edema.

DR. PERCIVAL EATON, Pittsburgh, Pa.: In the anemia which frequently complicates these cases I would suggest the longer administration of iron. I think we sometimes keep these children in bed too long. In many cases the heart can be trained to meet the needs of the child; we seem to forget how much can be done by beginning with a very little exercise and gradually increasing it.

DR. FRANK S. CHURCHILL, Chicago: One can get around the long rest in bed by passive exercises. The question of allowing the child up when the pulse is 100 or less depends on the age of the child and the blood-pressure.

DR. L. E. LA FETRA, New York: The family tendency to endocarditis may be explained by the hereditary tendency of lymphoid tissue to infection. The blood-pressure can be used as a guide along with the pulse-rate to determine when the patient may be allowed out of bed. Often for the first few days after the child is up the heart will be rapid; then it will get its second wind, so to speak, and go along all right.

DR. HERBERT WILCOX, New York: One should get these children with anemia and endocarditis into the country. We have a hospital branch in the country, and last summer sent a number of children out there who were under the observation of one of the members of the hospital staff. They received no treatment except good hygienic care, and most of them were permanently improved by this method. This shows why better results are obtained in the families of the wealthy than in those of the poor.

DR. FLOYD M. CRANDALL, New York: Many children in poor surroundings get hospitalism if kept in bed too long. It is not well to center the child's mind on his heart, and in order to avoid doing this I often make the excuse that I am examining the child for a cough when I am observing the heart. One cannot tell much about the heart unless the child is asleep. The relation of the family history of rheumatism in these cases is interesting. In a family that came under my observation in which there were seventeen cousins, every one had either chorea, endocarditis or rheumatism.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

May 15, XVI, No. 2, pp. 127-257

1 *Cytologic Characteristics of Erythroblasts in Pig Embryo; Origin of Non-Nucleated Erythrocytes by Cytoplasmic Constriction. V. E. Emmel, Washington, D. C.
2 Structural Unit and Growth of Pancreas of Pig. G. W. Corner, Baltimore.
3 Ameboid Movement in Corial Melanophores of Rana. D. Hooker, New Haven, Conn.
4 Weight of Thymus of Albino Rat (Mus Norvegicus Albinus) According to Age. S. Hatai.

1. **Erythroblasts in Pig Embryo.**—The data derived by Emmel by investigation involving the study of blood-cultures, living and fixed blood-vessels in the pig embryo, together with the observations of other investigations for both red and white blood-cells in various mammals, raises the question whether the origin of non-nucleated erythrocytes by a process of cytoplasmic constriction does not merit more serious consideration. Concerning the prevalent views of nuclear extrusion and intracellular disintegration, Emmel claims that the arguments so far as they are based on the indirect evidence from free erythrocytic nuclei in the circulation, erythrocytic nuclear inclusions in phagocytic cells, and nuclear particles in plastids, do not appear conclusive for either theory, and seem equally well accounted for on the basis of cytoplasmic constriction. Nor is the more direct evidence for nuclear extrusion, at least in the embryo, sufficiently convincing but that the problem appears still to be an open one concerning which the present data for cytoplasmic constriction may be justifiably introduced. The organ of non-nucleated erythrocytes by cytoplasmic constriction, if correct, renders the erythroblasts in this respect comparable with the megakaryocytes, plasma cells and lymphocytes, to which they are apparently closely related genetically, for according to recent investigations these cells normally contribute to the mammalian circulation at least two important non-nucleated morphologic elements other than plastids, by the constriction off parts of their cytoplasm.

Journal of Experimental Medicine, Lancaster, Pa.

June, XIX, No. 6, pp. 523-602

5 *Free Malarial Parasites and Effect of Migration of Parasites of Tertian Malarial Infections. M. R. Lawson, New London.
6 Adrenalin Index of Adrenals in Health and Disease. V. P. W. Sydenstrickler, B. J. Delatour and G. H. Whipple, Baltimore.
7 *Ovarian Infection in Domestic Fowl and Direct Transmission of Disease to Offspring. L. F. Rettger, New Haven.
8 Morphologic and Developmental Anomalies of Pathogenic Strain of Trypanosoma Lewisi and Their Relation to Its Virulence. W. H. Brown, New York.
9 Certain Spontaneous Chicken Tumors as Manifestations of Single Disease. 1. Spindle-Celled Sarcomata Rifted with Blood-Sinuses. P. Rous, New York.
10 Id. II. Simple Spindle-Celled Sarcomata. L. B. Lange, New York.
11 *Recognition of Cholera Vibrio. C. V. Craster, Rosebank, N. Y.
12 Cultivation of Human Tissue in Vitro. J. R. Losee and A. H. Ebeling, New York.

5. **Free Malarial Parasites.**—The malarial parasite is extracellular throughout its life cycle and migrates from one red corpuscle to another destroying each before it abandons it; in the brief intervals between according to Lawson the parasite is free in the blood-serum; it does not remain free long, but almost immediately attaches itself to another red corpuscle by means of delicate pseudopodia. The compact form of the tertian parasite is the type of free parasite most often observed; in this form the parasite may be seen not only in migration, but after quinin and in the cadaver. Lawson believes the compact form to be the normal resting form of the parasite, all other forms being assumed in order to secure attachment and to obtain food, and cautions against confounding free parasites having protoplasmic pseudopodia ready for attachment with the sexual flagellating parasites, whose flagella are composed of chromatin.

The malarial parasite can live for some time free in the blood-serum, though under normal conditions there is no reason why it should remain free for any length of time, and there are certain periods in the life of the parasite when it must be admitted that it is free from the corpuscle and survives. If the parasite is attached to the external surface of the red corpuscle, it is constantly exposed to the action of the patient's serum. The destruction of more than one red corpuscle by each parasite, Lawson says, would readily account for the severe and early anemia occurring in malarial infections. Long continued treatment with quinin will eventually cause the death of all malarial parasites.

7. **Ovarian Infection in Domestic Fowl.**—Ovarian infection and germinal transmission of disease have been conclusively demonstrated in Rettger's investigations of bacillary white diarrhea in the common domestic fowl. The disease, which has caused so much loss to the poultry industry in recent years, primarily affects young chicks that are but a few weeks old. Chicks which survive frequently become permanent bacillus carriers, the ovary being the important seat of infection. The eggs from such carriers often harbor the organism of the disease in the yolk. Chicks that develop in infected eggs become in turn infected, and have the disease at the time of hatching. The disease is transmitted to normal chicks through the infected droppings; thus an epidemic is produced, and the cycle of infection is completed. There is no evidence to indicate that germinal transmission through the male takes place. In view of the frequent negative results bearing on this question it seems probable that it does not.

11. **Recognition of Cholera Vibrio.**—Although it cannot as yet be definitely proven Craster believes we are justified in suspecting cholera-like vibrios which eventually develop agglutination properties are of a true cholera nature. It is probable that the production of agglutination and antibodies in the serum brings about the development by the bacterial cell of defensive antiagglutinins, resulting in the disappearance of agglutinating power. In the case of the water vibrios, changed physical conditions could bring about a similar alteration in biologic properties. It may be said that the absence of agglutination in a vibrio isolated from a suspected source does not define conclusively its non-cholera nature. In all probability among a number of cholera-like vibrios isolated from suspected sources a certain percentage will eventually be found to develop agglutination either during laboratory cultivation or by means of animal passage, and until subjected to a procedure that will induce the return of agglutination no vibrio can be regarded with assurance as of a truly saprophytic variety.

Journal of Infectious Diseases, Chicago

May, XIV, No. 3, pp. 403-528

13 *Production of Precipitins. L. Hektoen, Chicago.
14 *Colon Group of Bacteria. L. A. Rogers, W. M. Clark and B. J. Davis, Washington, D. C.
15 *Diminished Coagulation of Blood in Anaphylactic Shock in Dog. O. H. P. Pepper and E. B. Krumbhaar, Philadelphia.
16 New Method of Determining Relative Stability of Sewage Effluent, or Polluted River Water. A. Lederer, Chicago.
17 *Therapeutic Use of Certain Azo-Dyes in Experimentally Produced Tuberculosis in Guinea-Pigs. L. M. DeWitt, Chicago.
18 Comparison of Plating and Microscopic Methods in Bacteriologic Examination of Milk. G. W. Goodrick, Laramie, Wyo.

13. **Production of Precipitins.**—By giving rabbits intraperitoneal injections of increasing quantities of serum or blood on three successive days, Hektoen says, a serviceable precipitating serum may be produced in about fifteen days. The same quantity of antigen injected at one time also appears to give good results. The curve of the precipitin in such cases is like the simple antibody curve following a single injection of other antigens. The injection of whole blood may be more advantageous in producing more precipitins for blood-proteins in general than the injection of serum only. The injection of washed human corpuscles give rise to precipitins for human serum.

14. **Colon Group of Bacteria.**—A collection of typical gas-forming bacteria occurring in milk was obtained by the authors from widely separated and representative sources. These cultures were examined for morphology, spore for-

mation, Gram-stain, amount of gelatin liquefaction, production of indol, reduction of nitrates and neutral red, and amount of acid produced from dextrose, levulose, galactose, adonite, saccharose, lactose raffinose, starch, inulin, mannite, salicin and dulcite. Particular attention was given to the production of gas in media containing dextrose, and for the isolation of this gas the exact method of Keyes with some modifications was used. The carbon dioxid to hydrogen ratio which occurred with the greatest frequency was approximately 1.1. Plotted on the frequency basis this ratio stands apart from all higher ratios. All cultures giving the 1.1 ratio are distinguished from high ratio cultures by the amount of gas formed under exact conditions. This was uniformly less than the amount produced under identical conditions by the high ratio cultures. The amount of acid produced from the individual test substances could not be used to advantage because this was frequently obscured by a secondary alkaline fermentation in which the acid was partially or entirely neutralized. The low ratio cultures fermented a smaller number of test substances than those giving a high ratio, but this difference was not always in those substances usually considered to be fermented with the greater difficulty. The low ratio cultures are distinguished by a high percentage of cultures giving a positive indol test, reduction of nitrates and fermentation of dulcite and glycerin. Very few cultures ferment adonite and starch, and only about 40 per cent. ferment saccharose and raffinose. The high ratio cultures, on the other hand, give a lower percentage of positive test with indol, a much higher number of positive tests with adonite and starch, nearly all ferment saccharose and raffinose but only a few ferment dulcite and glycerin. The low ratio group may possibly be divided into those which ferment dulcite but fail to ferment adonite and starch, and those which do not ferment dulcite but occasionally ferment adonite and starch. No data are available for a logical subdivision of the high ratio group with the possible exception of the small number liquefying gelatin. The 10 gelatin liquefying cultures agreed very closely in the gas ratio, the fermentation of saccharose and glycerin, and the failure to ferment adonite and dulcite. They differed from other high ratio cultures especially in the gas ratio and the fermentation of glycerin. The collection contained a few cultures which differed radically from the others in giving a prolonged fermentation in milk with the production of enormous quantities of gas, and one type which was distinguished by the fermentation of dextrose with the production of carbon dioxid only.

15. **Diminished Coagulation of Blood in Anaphylactic Shock.**—Of 7 dogs developing marked anaphylactic shock, all showed a delay in, or absence of, coagulation of the blood. In all of these the addition of calcium and thromboplastin solution to the oxalated plasma restored its coagulability much more efficiently than calcium alone, or calcium plus fibrinogen solution. No noteworthy change was observed in the fibrinogen content of the blood in this group. The authors believe that such results point to a decrease of thromboplastin or an excess of antithrombin as the important feature responsible for the loss of power of coagulation in anaphylactic shock. Five dogs with slight or no shock showed no changes in the coagulability of the blood, except that in 4 the freshly prepared oxalated plasma (1.10) clotted spontaneously. In no case was clotting observed in richer proportions of oxalate (1.15). The supposition that this coagulation in the presence of oxalate might be due to an excess of calcium in the blood was shown by the result of quantitative calcium determination to be untenable. The only plausible explanation in the authors' opinion is that suggested by the work of MacRae and Schnack, that is, that some thromboplastic substance, as kephalin, may be present and in the absence of an excess of oxalate is responsible for the clotting of the plasma.

17. **Azo-Dyes in Tuberculosis in Guinea-Pigs.**—DeWitt found that trypan blue and trypan red readily penetrate the tubercle in all stages of its development, thus showing that it is possible to penetrate the avascular tubercle by chemicals introduced either subcutaneously, intravenously or intraperitoneally. Trypan blue and trypan red do not penetrate the tubercle bacillus well, and do not kill it in vitro even after twenty-four hours' exposure to a 1 per cent. solution. In therapeutic doses, frequently repeated for long periods, trypan blue and trypan red seem to have no favorable or curative influence in experimental tuberculosis in guinea-pigs. In a single large, nearly lethal dose at the beginning of the infection, they also have no favorable influence. Silver-trypan blue and iron-trypan blue also penetrate the tubercle, but have no bactericidal and no therapeutic influence. It is doubtful whether the metals are carried in with the dye. Copper-trypan blue is soluble, but does not penetrate either the normal or the tuberculous tissues, and is probably changed to an insoluble form or a suspension colloid and retained at the point of injection. Mercury blue is insoluble, is strongly bactericidal in its action on the tubercle bacillus, but is too toxic for therapeutic use, since the pigs died apparently from chronic mercury poisoning rather than from the tuberculous infection, the tuberculous process being generally very slight. The findings with this salt, however, are suggestive, and further experiments with mercury salts will be made.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

May, V, No. 5, pp. 425-525

19 Action of Muscarin on Electric Response of Heart. G. R. Mines, Cambridge, Mass.
20 *Swelling of Colloids and Hydrogen Ion Concentration. L. J. Henderson, W. W. Palmer and L. H. Newburgh, Boston.
21 *Site of Action of Strychnin. H. McGuigan and F. C. Becht, Chicago.
22 *Action of Certain Drugs on Bronchioles. D. E. Jackson, St. Louis.
23 *Pharmacologic Action of Certain Substances on Bronchioles. D. E. Jackson, St. Louis.

20. **Swelling of Colloids.**—No influence to increase colloidal swelling has ever been observed through the action of hydrogen ions varying within the ranges of acidity known to occur in the body or in the urine. A number of investigations make clear the quantitative relationship between hydrogen ion concentration and the swelling of fibrin and of gelatin plates. Such variations in osmotic pressure as may occur in autolysis and in a variety of other ways greatly influence colloidal swelling and also the swelling of bits of fresh kidney. A tendency to acidity in the organism is not commonly accompanied by edema, but is usually quite independent of any known disturbance of the water equilibrium of the organism. Hence it is utterly fallacious to assume that any significance, as a cause of edema, attaches to the frequent occurrences of a tendency to acidity—one of the commonest of pathologic states—in edema. A tendency to acidity of the urine often occurs apart from nephritis and albuminuria. Hence it is fallacious to argue that any significance, as a cause of nephritis, attaches to the frequent occurrence of this very common pathologic condition in nephritis and albuminuria.

21. **Site of Action of Strychnin.**—Strychnin according to McGuigan and Becht acts on both motor and sensory neurons and no tetanus can develop from its action unless the motor neuron is directly acted on by it.

22. **Action of Drugs on Bronchioles.**—Jackson found that arecolin produces immediate and profound bronchoconstriction. This can be readily overcome by epinephrin, etc. Small doses of atropin or hyoscin (or of the so-called duboisin) completely prevent the constrictor action of arecolin. Arecolin is very much more active than pilocarpin both on the bronchioles and on the heart. The action of arecolin tends to pass off much more quickly than that of pilocarpin. Hordenin is a very active bronchodilator. This action depends on a stimulation of the sympathetic nerve endings. It stimulates the heart and produces a moderate, prolonged rise in blood-pressure. It will produce bronchodilatation after constriction has been established by arecolin, pilocarpin, B-iminazolylethylamin or thebain. The dilatation thus produced is usually of a more prolonged and lasting character than that produced by epinephrin. The

rise in general blood-pressure is, however, only about one-fourth to one-sixth as great as that produced by epinephrin. B-iminazolylethylamin produces marked bronchoconstriction of direct muscular origin and which hordenin, epinephrin, "lodal," etc., may or may not overcome, depending on the extent and duration of the constriction and the quantities of the drugs administered. This practically amounts to a pitting of the direct muscular contracting action of the former drug against the indirect nervous bronchodilating action of any one of the latter drugs. The result in any given case will simply amount to the algebraic sum of these two forces. "Lodal" (6.7 dimethoxy-2 methyl-3.4 dihydroisoquinolinum chlorid) produces a moderate bronchodilatation after constriction produced by arecolin, pilocarpin and sometimes by B-iminazolylethylamin. This dilatation is apparently partly (but probably not wholly) due to the liberation of epinephrin from the adrenal glands which has been shown by others to occur. Hydrastinin has a similar but weaker action. B-tetrahydronaphthylamin produces moderate bronchodilatation after pilocarpin, etc. There is also a marked rise in blood-pressure. Thebain produces profound bronchoconstriction. This is of direct muscular origin. It may be overcome to a considerable extent by hordenin or epinephrin. "Lodal" is much less effective. This intense bronchoconstriction is probably rather closely associated with the strychnin like convulsions observed by Magendie, Bernard and others. The amount of the prescribed therapeutic dose appears to be well within the limits of quantities which may be expected to produce distinct bronchoconstriction in the human subject. Ergotoxin possesses no very marked specific action of its own to the bronchioles, either in the way of dilatation or constriction when injected intravenously into spinal animals. And all other drugs tested out (arecolin, pilocarpin, thebain, epinephrin, "lodal," hordenin) act in a perfectly normal manner on the bronchioles after enormous doses of ergotoxin have been injected intravenously. So far as the action of drugs on the bronchioles is concerned the conclusion is reached by Jackson that bronchoconstrictor nerves always respond true to the vagus type, and bronchodilator nerves always react in a manner exactly analogous to that of the visceral thoracico lumbar sympathetics. But the relative extent of these reactions with various drugs may vary through rather wide limits.

23. **Pharmacologic Action of Certain Substances on Bronchioles.**—A new method for carrying on artificial respiration by means of a specially devised piece of apparatus is described by Jackson. This piece of apparatus fits inside the thorax and the lungs are inflated by exhausting the air from the cavity of the chest whose walls are held rigidly in place by the apparatus. Experiments were performed mostly on dogs and cats. It has been impossible to confirm (in these animals) the observations of others that epinephrin produces a preliminary specific bronchoconstriction. Arecolin produces extreme bronchoconstriction. Its action may be overcome by epinephrin, "epinine," etc., or prevented by atropin or hyoscin. The action of arecolin differs in several particulars from that of pilocarpin. Hordenin is a very effective bronchodilator. It possesses this action after constriction has been produced by pilocarpin, arecolin, and sometimes after B-iminazolylethylamin and thebain. It raises the general blood-pressure much less than epinephrin. B-iminazolylethylamin produces marked bronchoconstriction of direct muscular origin which, under certain conditions, may be completely overcome (dilatation) by hordenin or epinephrin. Under certain other conditions these drugs fail to cause dilatation after B-iminazolylethylamin. "Lodal" (6.7 dimethoxy-3 methyl 3.4 dihydroisoquinolinum chlorid) produces moderate bronchodilatation. Hydrastenin has a similar but weaker action. This is probably partly due to liberation of epinephrin. B-tetrahydronaphthylamin produces moderate bronchodilatation (active). Thebain produces profound bronchoconstriction of direct muscular origin. Hordenin, "epinine," epinephrin, etc., are able to overcome this, under certain conditions, to a moderate degree. This bronchoconstriction probably is rather closely associated with the strychnin like convulsions ordinarily produced by thebain. The prescribed therapeutic dose of thebain would appear to be within the limits of quantities which might be expected to cause a fair degree of bronchoconstrictor. Ergotoxin has a mild specific bronchoconstrictor action which is probably of direct muscular origin. After enormous doses of ergotoxin perfectly normal reactions were obtained by the use of all other drugs tested out (i. e., arecolin, thebain, pilocarpin, epinephrin, tyramin, "lodal," hordenin).

Medical Record, New York

May 30, LXXXV, No. 22, pp. 967-1012

24 Clinical Study of Traumatic Nerve Paralysis. A. S. Leverty, New York.
25 Management of Laryngeal Tuberculosis in Sanatoria and Private Practice. W. Freudenthal, New York.
26 Observations, Based on Forty-Five Years of Electrotherapeutic Work. A. D. Rockwell, New York.
27 Cesarean Section. S. J. Druskin, New York.
28 Tobacco Amblyopia. G. W. Vandegrift, New York.
29 Provocative Wassermann Reaction. M. C. Pease, Jr., New York.
30 Prevention of Psychic Trauma. H. S. Munro, Omaha.
31 Divulsion of Arm and Scapula. G. K. Dickinson, Jersey City, N. J.

New York Medical Journal

May 30, XCIX, No. 22, pp. 1061-1112

32 Habitual Constipation and Its Treatment. M. Einhorn, New York.
33 Present Status of Abderhalden's Reaction. M. G. Wohl, Philadelphia.
34 *Lobar Pneumonia. E. E. Cornwall, New York.
35 Recognition of Mental Deficiency. L. E. Bisch, New York.
36 Treatment of Insane in Tropics. F. Woodbury, Philadelphia.
37 Jung's Libido Theory and Bergsonian Philosophy. B. M. Hinkle, New York.
38 Legal Status of Trained Nurses in Administration of Anesthetics. A. C. Vandiver, New York.
39 Hydrorrhea Nasalis. J. Guttman, New York.
40 Medical Colors. (Scarlet and Gold.) S. P. Gerhard, Philadelphia.
41 Capital Punishment in Electric Chair. S. R. Klein, New York.

34. **Lobar Pneumonia.**—The fifty-four cases of lobar pneumonia cited by Cornwall were treated by a special method. A point in the hygiene which is considered of importance is to temper the cold fresh air to the afebrile patient. During the febrile period of a well marked lobar pneumonia, Cornwall says, the fresh air should be cold, but in the aged and in cases with little or no fever, and always after defervescence, the patient should be kept warm and should be protected from drafts. Careless exposure of the patient when he has no fever may be responsible for complications.

A particular and essential feature of this treatment is the regulation of the diet along the following lines: The quantities of protein and fuel given are less than the minimum health rations; the diet as a whole is non-putrefactive; and it includes a sufficient quantity of the food salts needed by the body, especially the calcium salts, of which a deficiency regularly exists in pneumonia. The purpose of this diet is to supply nourishment sufficient to carry the patient through the short period of this disease with a minimum of trouble from the alimentary tract, that region of special danger in pneumonia, whence may come general poisoning, vasomotor paralysis, nervous disturbances of the heart through reflexes and mechanic disturbances from distension.

Another essential and characteristic feature of this treatment is extreme caution and reserve in the use of cathartics. Castor oil or some other vegetable cathartic is preferred. The popular calomel and Epsom salts are looked on with disfavor by Cornwall, and he believes that the administration of that combination at the beginning of a pneumonia or any time in its course may add materially to the gravity of the prognosis. In this treatment, after an initial gentle purge, simple or soap suds enemas are given every second day if the patient is in good condition, until the expected time of the crisis, which is taken to be the fifth day of the disease; after that time, or at any time if there are signs of heart-strain, the bowels are not disturbed.

The treatment of symptoms according to this method is distinguished by conservatism. If there is severe pain in the early period of the disease, preventing necessary sleep, morphin or codein is given in moderate doses; but later in the disease, and especially near the time of the crisis, and

at any time if there is much respiratory embarrassment, opiates are strictly avoided. Hot poultices are sometimes applied for severe thoracic pain. For relief of restlessness, sodium bromid is the preferred drug. If delirium incites the patient to get out of bed, physical restraint is strictly enforced. If there is gastric irritability or diarrhea or tympanites, reduction of the diet is the only treatment given. The diet may be reduced to peptonized milk and barley water alone, or barley water alone, or water alone, with the food salts. If stimulation of the heart is needed, it is given according to the following plan. In the aged, in alcoholics, and in patients with preexisting myocardial disease, it is given from the beginning. In young adults with originally healthy hearts it is usually delayed until signs of heart-strain appear, which is generally not later than the fourth day. The first stimulant given is strychnin sulphate, in doses of one-sixtieth grain three to six times a day. If more stimulation is needed, tincture of strophanthus is given in doses of one and a half minim every four hours. The strychnin sulphate is increased on occasion to one-thirtieth grain every four hours, which is the maximum amount of that drug permitted in this disease, and the strophanthus to two or three minims every four hours. In a large majority of cases, Cornwall states, more than this stimulation is not called for, but if it should be required, caffein citrate in doses of 1 to 3 grains every four hours is added. In cases with extremely low blood-pressure, epinephrin is given, hypodermically or by mouth. If there is an obstinately dilated right ventricle, digitalin is given hypodermically, in addition to the other heart stimulants. For extreme dilatation of the right ventricle threatening disaster, Cornwall believes venesection to be indicated. Whiskey, in small doses, is given to alcoholic patients and to the aged if they bear it well.

New York State Journal of Medicine

May, XIV, No. 5 pp. 229-287

42 *Kinetic System. G. W. Crile, Cleveland.
43 Quarantine Requirements Presented to Legislature. J. J. O'Connell, New York.

42. Abstracted in The Journal, May 23, p. 1685.

Pennsylvania Medical Journal, Athens

May, XVII, No. 8, pp. 605-686

44 Philadelphia Laymen and Physicians Unite to Reform Medical Charities Abuse. J. D. Farrar, Philadelphia.
45 Dispensary Abuse. H. M. Fussell, Philadelphia.
46 *Present Conception of Arthritis Deformans. D. Silver, Pittsburgh.
47 Omental Adhesions. G. P. Muller, Philadelphia.
48 *Clinical Significance of Low Blood-Pressure. G. M. Piersol, Philadelphia.
49 Acute Edematous Laryngitis. J. F. Culp, Harrisburg.
50 Prosecution and Conviction of Malingerer on Strength of an Ophthalmoscopic Examination. J. E. Willetts, Pittsburgh.
51 Intra- and Extranasal Indications for Submucous Resection of Septum. J. H. McCready, Pittsburgh.
52 Some Ocular Disturbances of Nasal and Accessory Sinus Origin. N. S. Weinberger, Sayre.
53 Preservation of Physiologic Functions in Treatment of Gynecologic Diseases. H. D. Beyea, Philadelphia.

46. Abstracted in The Journal, Oct. 18, 1913, p. 1485.

48. **Significance of Low Blood-Pressure.**—When low blood-pressure is due to the acute infectious diseases, Piersol says, measures should be instituted to promote adequate elimination of the toxins of the disease and to stimulate the flagging heart or failing vasomotor mechanism, as the case may be. When in course of chronic visceral disease low blood-pressure indicates the onset of cardiac weakness, rest, proper food and stimulation of the weakening cardiac muscle must be resorted to. If the hypotension is but the manifestation of some cachectic state, the cause of the cachexia must be removed if possible. When it results from hemorrhage or dehydration of the system due to persistent vomiting and purging, not only should measures be instituted to relieve the underlying cause, but the depleted volume of circulation should be restored and maintained by the use of normal salt solution intravenously, subcutaneously or by the bowel. In the type of case referred to last, in which the low blood-pressure has no definite discoverable cause other than poor hygiene and malnutrition, Piersol has found that much can be done by forced feeding, proper rest, fresh air, cool bathing, properly graduated exercises, and the use of such drugs as iron and strychnin to overcome the anemia and restore the general muscular tone of the individual.

Wisconsin Medical Journal, Milwaukee

May, XII, No. 12, pp. 379-410

54 *Gas Oxygen Novocain Anesthesia. W. E. Bannen, La Crosse.
55 Nitrous Oxid Anesthesia. H. M. Decker, Davenport, Ia.
56 Congenital Stenosis of Pylorus. W. C. F. Witte and P. H. Jobse, Milwaukee.
57 Anaphylaxis in Cancer. F. G. Connell, Oshkosh.
58 Early Diagnosis of Syphilis. O. H. Foerster, Milwaukee.
59 Cancer and Cancer Problem. W. E. Ground, Superior.

54. Abstracted in The Journal, Nov. 1, 1913, p. 1656.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

May 23, 1, No. 2786, pp. 1105-1164

1 Objections to Incomplete Operation for Cancer of Breast. C. B. Lockwood.
2 *Report of Work Carried out at Radium Institute, London, 1913. A. E. H. Pinch.
3 Chemico-Physical Laboratory on Radium. W. L. S. Alton.
4 *Case of Multilocular Cystic Disease (Cystadenoma) of Pancreas. E. C. Hadley.
5 Acute Obstruction of Small Intestine. C. A. Pannett.
6 Pituitrin in Postoperative Intestinal Stasis. N. Porritt.
7 Ileocolic Intussusception in Child of Four Months: Resection: Lateral Anastomosis. W. S. Fenwick.
8 Treatment of Imperfectly Descended Testicles. E. M. Corner.
9 *Experimental Proof of Value of Mask over Surgeon's Mouth During Operations. A. L. Candler.

2. Abstracted in The Journal, Sept. 13, 1913, p. 893.

4. **Multilocular Cystic Disease of Pancreas.**—In 1901 Hadley's patient was operated on for an abdominal tumor. On opening the abdomen, a large cyst first came into view. One and a half pints of dark reddish-brown fluid were withdrawn. The tumor was found to be composed of a multitude of smaller cysts congregated to form a large lobulated tumor extending to the right. It shelled out quite easily until the duodenum was reached. The pancreas was therefore ligated at its neck; the head, although very cystic, was left behind for various reasons. The tumor removed consisted of the whole of the body and tail of the pancreas, and measured 10 inches by 7 inches. It consisted in the main of a large number of cysts varying in size, separated from one another by septa of fibrous tissue and a varying amount of apparently normal pancreatic tissue. The cysts were larger at the tail end than at the head end of the organ. The large cyst, which gave rise to most of the physical signs, was at the extreme tail end. It occupied the whole thickness of the tumor in this situation. The fluid from this large cyst contained altered blood and a large quantity of albumin. It had no amylolytic or proteolytic properties. It was alkaline in reaction. The fluid contained in the smaller cysts was colorless and watery.

From January, 1901, until June 6, 1910, this patient was able to work continuously as overlooker in a large steel pen factory. During that time she had needed practically no medical attendance. In July, 1910, when she again came under Hadley's care, she was almost completely confined to bed. She complained chiefly of gradual loss of power in her hand and arms, with numbness and tingling of the fingers. The muscles of the body generally, and especially of the hands and arms, were much wasted. She had a large tumor in the abdomen situated immediately above and extending to the right of the umbilicus. The tumor was recognized as the head and a portion of the neck of the pancreas in a state of cystic degeneration. It formed a prominent mass and displaced the intestines downward and into the left iliac region of the abdomen. The tumor according to the patient had been getting gradually larger for the last two or three years, but much more rapidly during the last two or three months.

It was painless, well defined and slightly movable. A large cyst could be recognized to the left of the tumor, and numerous small tense cysts studded all over the rest of it.

The skin of the chest, abdomen and thighs was curiously pigmented in irregular patches of a dark brown color, producing a piebald appearance. Except that every two or three weeks she had what she called "bilious attacks," the digestive functions were good. These attacks were "bouts" of uncontrollable vomiting; they were unaccompanied by pain or jaundice, and tended to recur more frequently toward the last. The urine, frequently tested, invariably contained a faint haze of albumin, a few granular and hyaline casts, but never any blood or sugar. The Cammidge reaction was positive throughout this part of illness. The course of her illness was, at first, one of rapidly advancing peripheral neuritis, with rapid wasting of the muscles, most marked in the upper extremities. One month later she had very little sensation in her arms or legs. The deep and superficial reflexes were abolished. Soon after this, rigidity followed by contractures commenced in her hands. The fingers became flexed at the interphalangeal joints, and over-extended at the metacarpophalangeal joints. The wrist joints also became overextended.

Toward the end of November, 1910, her condition resembled an advanced case of progressive muscular atrophy with contractures. In the beginning of 1911 the muscular wasting had become extreme. Both legs were immovably contracted, and both hands clawed (*main en griffe*). There was still a little voluntary movement possible in the arms, but complete loss of coordination. She had been quite unable to feed herself or move herself in bed for some time. There was never any jaundice. Sahli's sign was present. The bowels only moved with aperients, and later, all drugs were vomited, only after enemata. During the last two months of life mucous casts were passed in the stools, which were otherwise normal. Liquid food appeared to be well digested; at all events, no undigested fat or other material were seen in the dejecta. During the last few weeks of her illness there was incontinence of urine and feces. At the time of her death, March 30, 1911, no musculature could be felt; she had literally wasted to a skeleton. There was only partial relaxation of the contractures at death. Her mental condition remained clear until the end. The pancreas was removed en masse with the duodenum and gall-bladder attached. The specimen measured 8 inches in length by 6 inches in breadth at its widest part. The greatest circumference of the head was 11 inches. The stump of the neck—all, in fact, to the left of the groove containing the superior mesenteric artery and vein—was converted into a large unilocular cyst.

9. **Value of Mask over Surgeon's Mouth.**—In order to demonstrate the value of a mask over the surgeon's mouth during operations Candler carried out the following experiments with *Bacillus prodigiosus:* With ordinary breathing and quiet speaking no bacilli left the mouth. Coughing for two minutes caused only a few bacilli to be emitted, and these were controlled by a mask of eight layers of gauze, one of four layers being insufficient. Sneezing was shown to be a most dangerous source of infection from the mouth, one sneeze, and that an artificial one, producing 130 colonies of microorganisms in a circle of 3½ inches diameter at a distance of 18 inches. A mask of eight layers is not sufficient to keep back all organisms during prolonged sneezing, although it reduces the infection considerably. There was, however, no growth on a plate exposed to one sneeze through such a mask.

Clinical Journal, London

May 13, XLIII, No. 19, pp. 289-304

10 *Classification of Arthritis. D. W. C. Jones.
11 Acute Generalized Infective Paralysis in Adults. W. B. Warrington.
12 New Growths of Testicle. H. W. Wilson.
13 Clinical Study of Acapnia. J. F. Lessel.

May 20, No. 20, pp. 305-320

14 *Causes and Treatment of High Blood-Pressure. F. de H. Hall.
15 Danger-Signals in Suppuration of Middle Ear. H. A. Kisch.
16 Malingering. J. Collie.

10. **Classification of Arthritis.**—The following list of the common manifestations of pathology and their application to joints is quoted by Carmalt-Jones: 1. Senility—osteoarthritis, in part, overworked, malnutrition—contributory to osteoarthritis. 2. Metabolic toxemia—gout. 3. Infective toxemia—acute rheumatism, rheumatoid arthritis. 4. Focal infection—gonococcal, pneumococcal typhoid, purulent arthritis. 5. Granulomatous infection—tubercular syphilitic arthritis. 6. Neoplasms—rare. 7. Trauma—traumatic synovitis. Arthritis in hemorrhagic diseases.

14. **Causes and Treatment of High Blood-Pressure.**—The longer Hall watches cases of arteriosclerosis the less value does he place on drugs in the treatment of this condition. A serviceable group of drugs is that which has an aperient effect. Among these he would give the first place to calomel and blue pill. These preparations are not only useful as aperients, but they also have a very remarkable effect in lowering blood-pressure. A teaspoonful of Epsom or Glauber's salts may be taken in half a tumblerful of warm water before breakfast, or one of the mineral waters be substituted. Next to the aperients Hall places the iodids. He usually employs the potassium salts, but some patients tolerate the sodium salt better. In patients with a syphilitic history the Wassermann reaction should be tried, and, if positive, mercury should be administered, preferably by inunction. Hall would not advise salvarsan in these cirumstances. After a mercurial course potassium iodid may be given in full doses.

At the menopause or in the obese, small doses of thyroid extract, together with a combination of bromid and iodid of potassium, will be found most useful in diminishing weight, lowering tension, and relieving the patient of the flushes and feeling of fulness in the head. If the iodids are badly borne, potassium or sodium nitrite in 1 to 2 grain doses may be tried, but doses up to 5 grains have been warmly advocated. In solution they are unstable, so they are best ordered in chocolate tablets.

In a few cases Hall has found much benefit from the administration of hippurates of ammonia and lithia. The latter is the one he usually employs; 3 or 4 grains may be given daily. The ammonia salt is less powerful; 6 to 7 grains may be given daily. The more powerful and more quickly acting vasodilators, such as amyl nitrite, nitroglycerin and erythrol tetranitrate, Hall reserves for emergencies, chiefly for anginal or dyspneal attacks coming on in patients with high blood-pressure. For the very acute attacks the inhalation of 3 minims of nitrite of amyl on a pocket-handkerchief will often give immediate relief, and its action may be continued by giving $\frac{1}{100}$ grain of nitroglycerin. This dose may be increased up to $\frac{1}{10}$ grain, i. e., ten times the initial dose. He has found erythrol tetranitrate in doses of ¼ grain most useful in patients who get anginal symptoms on starting to walk. The drug should be given a quarter of an hour previously.

Blood-letting is a remedy which Hall has found of the greatest possible service in certain cases of high blood-pressure. Venesection is indicated where the patient is unconscious and cerebral hemorrhage is feared; also in convulsive cases attended with high tension. In these cases the timely abstraction of from 10 to 20 ounces of blood, according to the severity of the attack and the sex of the patient, will often be attended with a most satisfactory result. Hall emphasizes the value of the sphygmomanometer in cases of coma, as an indication for the employment of venesection; as by this means one is able to distinguish between coma due to hemorrhage and that caused by thrombosis, as in the latter condition blood-pressure is invariably low.

Lancet, London

May 23, I, No. 4734, pp. 1441-1514

17 *Work at Radium Institute for 1913. A. E. H. Pinch.
18 *Diagnosis of Pulmonary Tuberculosis. A. C. Inman.
19 So-Called Reeducation of Deaf. R. Lake.
20 Knowledge of Experimental Nephritis. H. Oertel.
21 Syphilis of Central Nervous System, Salvarsan. J. E. R. McDonagh.
22 *New Combined Method of Prostatectomy. J. L. Thomas.
23 Case of Congenital Defect of Ulna. P. B. Roth.

24 Secondary or Symptomatic Leukemia. G. R. Ward.
25 Bacillus Coli as Cause of Septic Onychia. Report of Three Cases. T. Houston and W. W. D. Thomson.
26 *Case of Tetanus Treated with Subcutaneous Injections of Phenol; Recovery. W. G. Reynolds.

17. Abstracted in The Journal, Sept. 13, 1913, p. 893.

18. **Diagnosis of Pulmonary Tuberculosis.**—Inman is convinced from experimentation that the antihemolytic power of tuberculous serum can be made manifest in a hemolytic experiment by introducing Besredka's antigen into the mixture. He says that repeated positive reactions, especially with a 32-fold serum dilution, in the absence of a positive Wassermann reaction, indicate the presence of an active tuberculous lesion. Repeated negative reactions indicate the absence of an active tuberculous lesion, if cases of under twelve months' duration be excepted.

22. **New Combined Method of Prostatectomy.**—An incision is made into the bladder under spinal analgesia, and as soon as the bladder is emptied of fetid urine, Thomas pours about an ounce of pure tincture of iodin into it, then drains perineally after injecting tincture of iodin through the meatus along the urethra into the prostatic bed. The patient is lying on his back as in the ordinary suprapubic operation during the whole of its performance, the perineal opening being made on the point of the forceps passed transvesically from above, while the legs are simply spread apart in order to see and to cut on the projecting end of the forceps under the skin. The enucleation is done by the forefinger in the bladder, but frequently Thomas passes the other forefinger into the perineal opening to assist the enucleation from below as in the ordinary perineal prostatectomy. The pouring of pure tincture of iodin into the bladder before the enucleation is started he claims is of great importance, because as soon as fresh raw surface is made in the process of enucleation the tincture follows into every hole and corner. The injection of the tincture along the urethra also ensures a cleaner urethra and further floods the freshly made "prostatic bed."

26. **Tetanus Treated with Injections of Phenol.**—In the case cited by Reynolds the wound and the scar were excised and pure phenol was applied. At the same time the subcutaneous injection of phenol was started, 1 ounce of a 1 per cent. solution being given in the right axilla. Under chloroform anesthesia the injections were repeated, the strength of the solution being raised to 3 per cent. The groins and axilla were treated alternately. Chloroform was administered at each injection owing to the spasms produced by the stimulation of the needle-prick. A careful watch was kept for phenol poisoning, but at no time did the patient show any symptoms. The urine retained its normal color throughout.

On the following morning the spasms became very violent, and the child suffered great pain. Potassium bromid gr. xx and chloral hydrate gr. xx were administered four hourly, and the patient became more quiet. On the sixth day cutaneous erythema and slight edema were noticed at the sites of injections, and these were discontinued. The spasms were increasing in violence and frequency, and the phenol solution was again administered on the seventh day. The injections were discontinued on the eighth and ninth days, but were recommenced at 2 a. m. on the tenth. On the thirteenth day the opisthotonos became very marked, and it increased during the following six days. By the twentieth day it had became excessive, although the spasms decreased both in violence and in frequency.

On the same day the opisthotonos suddenly began to diminish, and had entirely disappeared by the twenty-third day. The rigidity, especially that of the abdomen, did not relax for some time; in fact, this did not disappear for about seven weeks. The patient was able to open the mouth slightly about the sixteenth day, and by the eighteenth was eating bread and butter. Improvement continued uneventfully during the next four weeks, and he was discharged cured on the fifty-sixth day. He was seen three weeks later on return from a convalescent home, and was in perfect health. No antitetanic serum was administered.

* Annales de Médecine et Chirurgie Infantiles, Paris

May 15, XVIII, No. 10, pp. 321-356

27 Never Fail to Examine the Throat. (Regarder la gorge.) E. Périer.
28 Dietary Deficiency Disturbances. (Troubles provoqués par une alimentation exclusive.) E. Weill and G. Mouriquand.
29 *Wassermann Positive in Infant, Negative in Mother. M. Cassoute.
30 Gangrene of the Foot in Diphtheria. V. Veau and Weber.

29. **Conflicting Wassermann in Mother and Child.**—The reaction was negative in the mother but positive in the nursling. The child showed no signs of syphilis but did not seem to thrive until after it had been given a course of specific treatment. A number of similar cases from the literature are compared with this to emphasize the importance of the Wassermann test for young children, even those apparently normal. It may reveal those liable to develop serious nervous or other trouble late in life which there was nothing to suggest in childhood, the mother and other children apparently free from any taint of syphilis. Cassoute has encountered three cases in which dementia praecox developed about 20, like a bolt from a clear sky, as there had been nothing in the history of the family to suggest syphilis. If proper treatment had been started in childhood—on the basis of a positive Wassermann—irreparable injury of the nervous system might have been warded off.

Bulletin de l'Académie de Médecine, Paris

May 5, LXXVIII, No. 18, pp. 637-647

31 Nevus Cancers in Man and Horse Are Infra-Epitheliomas. Borrel.
32 Cure of Fracture of Clavicle in Ten Days by Letting Arm Hang over Side of Bed; At First without Support. Couteaud.

May 12, No. 19, pp. 649-664

33 *Grafting Operation to Prepare Orbit for Artificial Eye. (Greffes épidermiques orbitaires devant permettre dans les cas de cymblépharons le port d'un œil artificiel.) Magitot.
34 Black Secretion from Sebaceous Glands of the Breast. (Mélanidrose mammaire.) V. H. Torkomian.

33. **Grafting Procedure to Prepare Orbit for Artificial Eye.**—Magitot refers to cases in which the resection has had to be so extensive that there is no pocket left to hold the artificial eye and no material to which a graft can be sutured to make a pocket. He has been quite successful in such cases with a convex, hollow, silver support, flat at the back, with a hole at the rear into which fits a spring. This almond-shaped support is covered with a Thiersch flap at least 5x6 cm. in size. The edges of the flap are tucked into the opening at the back and are held there by the spring. This skin-coated prothesis is then slipped into the orbit, where it forms an adequate support for the artificial eye.

Bulletins de la Société de Pédiatrie, Paris

April, XVI, No. 4, pp. 197-240

35 *Modification of Diet Saves Ducklings from Epidemic Disease. P. Merklen.
36 Translucence of Skull in Diagnosis of Hydrocephalus, etc. C. Chatelin.
37 Defective Nourishment and Dilatation of the Stomach; Progress on Sweetened Milk; Two Cases. G. Variot and Grandjean.
38 Separation of the Epiphysis in an Infant and Young Child. (Décollement épiphysaire avant l'apparition du noyau osseux dans l'extrémité cartilagineuse.) Lance.
39 New Spiroscope. Lance.
40 Leg Grows Abnormally Long after Tuberculous Knee Process; Two Cases. Savariaud and Roederer.

35. **Modification of Diet Saves Ducks from Epidemic Disease.**—Merklen refers to the disease called *la crampe* which affects ducklings three or four weeks old. Their legs drag and finally they become paralyzed and die of starvation unless they are brought up by hand. A number of cases having occurred on a farm near Paris, he had the feed changed to a greater variety, and no further cases developed. A return to the former monotonous diet was speedily followed by development of new cases, and the epidemic subsided again when the mixed feed was resumed.

Presse Médicale, Paris

May 16, XXII, No. 39, pp. 369-380

41 *Poisoning from Food. (Les infections alimentaires par le groupe du bacille de Gaertner.) A. Zuber.
42 Botulismus. (Le botulisme hier et aujourd'hui.) C. Esmein.

41. **Poisoning from Food Contaminated with Bacteria of Gaertner Group.**—Zuber compares a number of cases of wholesale poisoning from food, including the Cholet poisoning from a *crème royale*, discussed editorially in THE JOURNAL, March 21, 1914, p. 939. The symptoms were similar in every respect to those with meat poisoning from the same group of paratyphoid bacilli, but the mortality was even higher; 10 deaths in 38 cases. Sacquépée found a mortality of only 41 in 2,723 cases on record, that is, 1.5 per cent. The interval was unusually short, only two hours; from twelve to thirty-six hours is the more usual interval. Treatment can be only symptomatic, inducing vomiting, rinsing out stomach and bowels, keeping up diuresis by hot baths, hot compresses to the abdomen and saline infusion. In the extremely toxic, cholera-like cases, stimulants for the heart and application of heat are indispensable. The fact that the toxin is apparently not modified by heat renders the paratyphoid bacillus particularly dangerous.

Revue de Chirurgie, Paris

May, XXXIV, No. 5, pp. 553-720

43 *Aneurysms and Injury of Nerves on the Battle-Field. O. Laurent.
44 *Sporotrichosis of the Breast. E. Quénu.
45 *Cecopexy. (Fixation du caecum au tendon du petit psoas.) P. Duval.
46 *Treatment of Injury of the Knee. (Plaies du genou et leur traitement.) L. Hayem.
47 *The Liver with Appendicitis. (Le foie dans l'appendicite.) J. W. Sallis. Commenced in No. 4.

43. **Battle-Field Aneurysms and Injury of Nerves.**—Laurent remarks that aneurysms used to be rarely encountered by the army surgeons but now they are frequent. The smaller size of the bullet facilitates spontaneous arrest of the hemorrhage, but the aneurysm which forms is liable to be mistaken for an abscess, especially as the pressure is so painful that the man clamors for operative relief. The danger of secondary hemorrhage, infection and gangrene is imminent, and the first dressing should be reenforced with elastic bands and splints as if the limb was fractured. Then expectant treatment should be the rule for five or six weeks, as the hematoma might possibly be absorbed, if the pain is not so violent as to demand intervention. Measures to promote collateral circulation, compression under water, baths, etc., may aid the process. It is rarely possible to suture the vessel. A ligature may be necessary before transportation but it favors infection and gangrene; an emergency ligature is indicated rather more for a diffuse aneurysm. He applies an elastic ligature at first, but it cannot be trusted for long. It is applied above and exactly at the limit of the injury to the artery. The pocket is opened and the clots removed with gauze and the hand. The peripheral stump may bleed and this is ligated also, but within the limits of the injury. Then the soft parts are sutured in tiers. Seventeen cases are reported in detail from the Balkan campaigns, with recovery of all but 3. The most distressing are the aneurysms in the neck; in one such case two unsuccessful attempts were made to ligate the injured common carotid before he succeeded and then another hemorrhage proved fatal.

Laurent operated in 18 of the 61 cases of injury of nerves of which he kept records, and he thinks operative treatment should be the rule for injury of a nerve in a limb, supplementing it with massage, hydrotherapy and injections of strychnin in 3 or 5 mg. doses. The results are better when the operation is postponed until all chance of infection is probably past. He describes 41 cases, with the details of his operative treatment when such was applied. The left radial nerve was the one most often injured, and his experience indicates that spontaneous restoration of a nerve is a most exceptional occurrence.

44. **Sporotrichosis of the Breast.**—Quénu adds another to the four cases on record in which women had a sporothrix tumor in the breast, not tender and not adherent to the skin or deeper tissues, resembling more a cyst than a malignant tumor in some of the cases. In others the tumor was as large as a hen's egg and adherent to the skin, hard except at one point, where there was fluctuation, the nipple retracted, the whole resembling a scirrhus. In cases of this type there were generally other lumps elsewhere which aided in the differentiation. In one case on record there was a concomitant cancer in the breast. All the patients were over fifty-seven; there was one man in the group. The subsidence of the tumors under potassium iodid confirms the diagnosis. In Quénu's case the lesion was curetted but was long in healing until iodid was given, when the breast healed rapidly as also an ulceration on the thigh and the lump in the arm promptly disappeared, but the abscess in the back still persists and he intends to hasten its healing by opening it.

45. **Cecopexy.**—Duval gives five plates to show the preferable technic for fastening the cecum to the psoas parvus.

46. **Gunshot, Stab or Crushing Injury of the Knee.**—Hayem analyzes 11 cases with thirteen operations, remarking that the old saying "the less one does, the better one does," cannot be accepted nowadays. For such injuries as these he advocates intervention and the sooner the better, and the prompt and complete recovery in the 2 cases in which he operated the fourth and sixth hours after a bullet or large stab wound severing the tendon of the quadriceps, confirms the advantages of this. The patients were dismissed completely restored the twenty-fifth and twenty-sixth day. Five patients did not regard their injury as serious and did not apply for treatment until several days or two weeks after the injury; 2 were left with a stiff knee and 3 died from the septicemia already installed or suppuration dragging through months. In 4 other cases the operation came the second day; the joint was already infected or the wound extensive and soiled at the time. Partial or total ankylosis could not be warded off, and the patients were in the hospital from 54 to 146 days.

47. **The Liver with Appendicitis.**—Sallis discusses twenty-five cases, pointing out the variety of disturbances liable in the kidney from the toxic and infectious features of appendicitis. There does not seem to be any effectual means of treating appendicular liver trouble. Prophylaxis is the only weapon at our command, removing the appendix before serious damage results.

Revue Mens. de Gyn., d'Obstét. et de Pédiatrie, Paris

April, XIX, No. 4, pp. 233-300

48 *Treatment of Hemorrhage with Placenta Praevia. A. Brindeau.
49 Weakness of Cicatrix after Extraperitoneal Cesarean Section. S. Delle Chiaje.

38. **Placenta Praevia.**—Brindeau clings still to the obstetrical treatment of hemorrhage from placenta praevia, relying on the rupture of the membranes, the inflatable bag, bipolar version, manual or instrumental dilatation, etc. Surgical treatment is only exceptionally required. The child is generally born prematurely when there is placenta praevia and the mortality is high, 25 to 70 per cent. even in recent statistics. Rupture of the membrane suffices to arrest the hemorrhage in about 50 per cent. of the cases, but this may lead to complications if labor does not follow. The metreurynter is not always easy to introduce with placenta praevia, and it might push up the placenta and separate it completely. Instrumental or bimanual dilatation still has a mortality of 7 or 8 per cent. All of these measures thus have their drawbacks for the mother and all are distinctly unfavorable for the child. If the hemorrhage still continues, the uterine artery can be clamped through the posterior roof of the vagina, or the aorta can be compressed by the hand or rubber-tube wound around the waist. Still another aid is to slip a chair under the mattress so as to raise the woman's pelvis until the venous pressure is less than the intra-uterine pressure, when the hemorrhage stops of itself.

Berliner klinische Wochenschrift

May 18, LI, No. 20, pp. 917-964

50 *Behring's Method of Vaccinating against Diphtheria. (Ueber das Diphtherieschutzmittel "Ta.") E. v. Behring and R. Hagemann.
51 Some Fundamental Principles of Chemotherapy. H. Ritz.
52 *Effect of Compressed Air. (Physiologie und Pathologie des Lebens in verdichteter Luft.) A. Bornstein.

53 *Obesity from Abnormally High Sugar Content of the Blood. (Hyperglykämische Obesitas.) N. Roth.
54 Multiple Diverticula of Large Intestine. H. Kohn.
55 Punctate Application of Thermocautery over Entire Erysipelas Area Aborts Attack. (Abortive Erysipelbehandlung.) J. Kumaris.

50. **Behring's Diphtheria Preventive.**—Behring's mixture of toxin and antitoxin, or "TA" as he calls it, is here officially described and the field for its application outlined. A colored plate shows the local reaction to the vaccination with it. The main points of this communication were summarized in the Berlin Letter, June 14, 1913, p. 1896, and May 30, 1914, p. 1738.

52. **Physiology and Pathology of Working in Compressed Air.**—Bornstein states that among the 694 men with caisson sickness whom he has attended, 90 per cent. had it in the form of "bends," that is, intense pains in the limbs, with marbling. The affection generally is transient, but he has known men incapacitated by the resulting chronic changes in the bones and joints. He remarks that in very few other affections have we so clear an understanding of the nature of the trouble as in compressed-air disturbances. They are the result of the absorption of nitrogen by the tissues, especially by fat and lipoid tissues—which include the nervous system—and then the formation of gas-bubbles as the pressure is released and the gas escapes from the tissues. The symptoms from the gas infiltration of the tissues predominate with caisson sickness and those from gas-bubble production in the disturbances in workers in diving bells. The corpulent are more liable to suffer than the lean, and the persons and organs with sluggish circulation suffer most.

In treatment, means to promote the circulation are an important factor, and Bornstein says that physical exercise is the safest and most effectual means to accomplish this. Men who have never experienced any disturbances at their work in compressed air are liable to begin to suffer if anything happens to hamper their circulation, either general or local. A heart or kidney affection or even an acute bronchitis has been known to bring on fatal caisson sickness in men who had been working for months in compressed air without suspicion of injury. Some of the men seemed to become habituated; fully 75 per cent. escaped recurrence among those who kept on working after their first attack of "bends." Gradual changing from the compressed to ordinary atmospheric pressure gives the gas a chance to escape into the lungs and be expelled without production of gas-bubbles. Oxygen helps; he has established by experiments on animals, on himself and on large numbers of workmen that pure oxygen under a pressure of three atmospheres can be borne for thirty minutes, and help in the expulsion of the nitrogen, as this gas diffuses most readily into a gas which contains little or no nitrogen. Stage decompression is aided by return to the compressed air at need, and "bends" is treated with massage and warm baths, supplementary to the inhalation of oxygen.

53. **Hyperglycemia with Obesity.**—Roth found the sugar content of the blood decidedly above normal in 4 of 16 obese patients examined. Alimentary glycosuria followed ingestion of 100 gm. of dextrose in only 3 of the 4 cases, but determination of the sugar content of the blood revealed the latent diabetes in all the cases. Restriction of the intake of carbohydrates was soon followed by marked improvement. Bang's method for determining abnormal proportions of sugar in the blood proved simple and reliable, and Bornstein commends it highly. Three drops of blood are soaked up into a piece of blotting paper, 16 by 28 mm. When dry, 5 c.c. of a boiling solution of potassium chlorid is poured over it (136 c.c. of a concentrated solution of potassium chlorid; 64 c.c. distilled water and 0.15 c.c. of 25 per cent. hydrochloric acid). This coagulates the albumin in the blood while the sugar diffuses in the fluid and the Fehling reaction is applied after half an hour. If this does not precipitate out any suboxids, then the sugar content of the blood is normal (below 0.15 per cent.). A precipitate means hyperglycemia. With four drops of blood a reaction is obtained with a sugar content of only 0.12 per cent. which is the lowest limit of the normal range.

When hyperglycemia is thus ascertained, an antidiabetic diet will not only tend to ward off further trouble from the underlying diabetes, but it will tend to cure the obesity. Hyperglycemia is liable to predispose to arteriosclerosis, contracted kidney, cerebral hemorrhage, cataract, eczema, furunculosis and gangrene, so there is every reason to get on its track early and put an end to it by appropriate dieting.

Centralblatt f. d. Grenzgebiete d. Med. u. Chir., Jena
XVIII, No. 3, pp. 205-318. Last indexed April 4, p. 1126

56 *Roentgen Treatment of Goiter. (Behandlung der Strumen und des Morbus Basedowii mit Röntgenstrahlen.) M. Lüdin.
57 *Biologic Diagnosis of Surgical Tuberculosis. G. Wolfsohn.
58 *Pulsating Pleurisy. (Pulsierende Pleuraergüsse.) E. Levi.

56. **Roentgen Treatment for Goiter.**—Lüdin lists and compares 208 articles on this subject, with special reference to exophthalmic goiter. The general verdict with simple goiter seems to be that a cautious trial of the Roentgen rays seems justified in cases of growing parenchymatous struma in the young. Under other conditions it is indicated only when operative treatment is contra-indicated or refused. Roentgen treatment has more of a field with exophthalmic goiter, and experience is accumulating that it has a favorable action on the Basedow goiter in numerous cases, F. A. Stoney regards it as the treatment of the future; only one of her 41 cases failed to show benefit and 14 were entirely cured. A number have reported benefit from this after failure of all other measures. The nervous disturbances and the impairment of the general health are what respond most favorably to Roentgen treatment. Stegmann's patient gained 3.3 kg. in three sittings and 20 kg. (44 pounds) by the seventh sitting, and four others have mentioned gains of from 4.8 to 22.7 kg. in two to four months. Next in order the tachycardia is influenced but more slowly, and the pulse may grow slower in time. Forty-two report that in time the protruding eyes receded entirely in 6; almost completely in 2; very slight protrusion was left in 9; in 14 there was very little change and none at all in 11. Subsidence of every symptom is rare; only eight writers have reported cases under this heading, but gratifying improvement has been reported by a number in proportions ranging from 33 to 100 per cent. Incomplete abortive forms and cases of acute iodin intoxication seem to have benefited from Roentgen treatment in the hands of some, but Lepine's patient did not seem to be affected.

Holzknecht asserts that the length of time required for treatment reflects the duration of the affection before treatment was begun. One patient with exophthalmic goiter for three months, was cured by a three-months' course of treatment; with three others the figures were respectively twenty-four, three and seven months, cured by twenty-two and six-months' courses of treatment. Two others whose Basedow dated from seven and four years were not cured even under eighteen and seven months of treatment. A few instances have been published of return of symptoms after radiotherapy; more numerous are the reports of durable cures, for one to four years. Ledoux urges exposing the thymus as well as the thyroid, and Kuchendorf includes the heart. Among those who denounce Roentgen treatment are Gebele, v. Eiselsberg, Hochenegg, Hahn and Schloffer. Their main objection is that in case an operation has to be done on the goiter later, the changes in the capsule from the radiotherapy interfere with the operation. But Lüdin remarks that time has shown that this interference is not of much moment. A more serious objection is the liability to transformation of the clinical picture into myxedema under too long Roentgen treatment; Wagner, Howell, Holland, Bergonié and Speder have each reported a case displaying this tendency. Zimmern, Raymond and Gilmer witnessed aggravation of the Basedow in 4 cases. Lüdin says in conclusion that the voices raised against Roentgen treatment are less numerous than those advocating it, but all agree that extreme caution is necessary.

57. **Biologic Diagnosis of Surgical Tuberculosis.**—Wolfsohn's article is based on 264 articles in recent literature discussing serologic findings, the tuberculin reactions and inoculation of animals as aids in differential diagnosis of surgical tuberculous affections. As there is comparatively

little toxic destruction of albumin with localized tuberculous processes, there is little or no instigation to production of antibodies, and hence such processes scarcely ever respond to ordinary serodiagnostic measures. More instructive are tests for opsonins, test transmission of anaphylaxis, and the meiostagmin reaction. These three technics are comparatively reliable but require such skill that they are beyond the reach of most.

The reaction at the focus after subcutaneous injection of tuberculin is extremely instructive, but a number of instances are on record in which this reaction seemed to have contributed to the spread of the disease. Pankow was led to assume bilateral disease from the pain coming on in each kidney after the test subcutaneous injection. The course of the case later proved that one was sound at the time. Krönig has never witnessed a focal reaction with less than 1 mg. of "old" tuberculin, and more than this dose he regards as dangerous. Hohlweg had hematuria in one case; Kremser has reported the flaring up of a latent process in one case—the apparently sound testicle suppurating; Schröder, suppuration around the rectum and epididymitis; Wegner, inflammation of the ribs, while Stricker has compiled a number of instances of prolonged reactions in children with aggravation of the disease or flaring up of old latent foci, generally in lymph-nodes, and acute exacerbations which proved fatal.

It is impossible to foretell any special general or local excessive susceptibility, so that Sahli and some others denounce the subcutaneous tuberculin test altogether. In Diem's two cases the joints swelled and endocarditis developed in one, and he thinks there can be no doubt of the tuberculous nature of this "articular rheumatism" which developed immediately after injecting 0.5 or 1 mg. of tuberculin.

The Pirquet skin tuberculin reaction is more constant and more intense with surgical than with pulmonary tuberculosis, unless the bone process is in the fungous, walled-in stage. This applies also to lupus; a positive reaction can generally be obtained only by applying the tuberculin directly to an opening made in the lupus patch; then an intense focal reaction becomes evident. According to the evidence to date a positive skin tuberculin reaction in children under 2 is a sign of active tuberculosis in every case. With children up to 10 or 12 it suggests a probable surgical tuberculous affection. A negative reaction, especially when repeated, renders the latter improbable.

58. **Pulsating Pleurisy.**—Levi gives brief summaries of 118 cases of pulsating pleurisy which he has found on record. The left side was the seat of the pulsating effusion in 93.6 per cent. of 110 cases, and 77.4 per cent. of 84 cases were in men. In the 45 cases in which the cause was known tuberculosis was incriminated in 55.5 per cent., pneumonia in 15.5, and in one case each, cancer, puerperal pyemia, influenza, polyarthritis and aneurysm, in 3 cases each, trauma and scarlet fever, and twice pneumococcus empyema. The outcome is known in 74 cases: 43.2 per cent. terminated in recovery; 10.8 were improved, 1.4 showed no change and 44.6 per cent. of patients died. The figures make a better showing in the 24 operative cases: recovery in 66.6; improved 12.6, and died 20.8 per cent. No attempt at operation was made in 44 purulent cases and 25 per cent. recovered and 61.3 per cent. died. If the effusion is not purulent medical measures should be given a thorough trial. If they fail the effusion should be aspirated by simple tapping. With a purulent effusion, no time should be lost before resecting ribs for thorough drainage of the pleural cavity. Any delay is dangerous not only on account of progressive debility but to ward off pericarditis.

Deutsche medizinische Wochenschrift, Berlin

May 14, XL, No. 20, pp. 993-1040

59 Operative Treatment of General Sepsis Originating in the Ear. (Die chirurgischen Eingriffe bei otogenen septischen Allgemeininfektionen.) W. Kümmel.
60 Influence of Santonin and Digitalis on Perception of Colors. H. Schulz.
61 *Salvarsan in Treatment of Progressive Paralysis. W. Runge.
62 Loss of Pupil Reflexes after Trauma. (Doppelseitige reflektorische Pupillenstarre nach Schädeltrauma.) R. Finkelnburg.
63 Treatment of Motor Disturbances of the Stomach. (Motilitätsstörungen des Magens.) H. Winternitz.
64 *Spastic Ileus. A. Fromme.
65 *Secondary Anesthesia Fatalities. (Der sekundäre Narkosentod.) G. Keil.
66 Cure of Advanced Urogenital Tuberculosis by Operative Means. R. Gutzeit.
67 To Avoid Anaphylaxis on Reinjection of Antitoxin. F. Cuno.
68 Friedmann's Remedy for Tuberculosis; Reply to Kraus in No. 19. L. Brauer.

61. **Salvarsan in Progressive Paralysis.**—Runge states that remissions worthy of the name occurred only in 3.9 per cent. of 380 cases in which no treatment had been taken; in 9.3 per cent. of 140 treated with iodid alone; in 11.4 per cent. of 35 with mercury alone; in 14 per cent. of 44 treated with a total dosage of 1 gm. salvarsan, and in 60 per cent. of 47 treated with a larger dosage of salvarsan, ranging from 1 to 10.5 gm. These figures speak in favor of salvarsan treatment, especially as the proportion of remissions increased with the dosage, from 28 per cent. among 72 given less than 3 gm. to 74 per cent. in the 19 given over 3 gm. The general health improved remarkably as a rule, even when the mind showed no special improvement. Full earning capacity to date was restored in 11 per cent. including some whose mind had shown impairment for several months. In general, however, results were better the shorter the interval since the first mental symptoms.

The best technic seems to be by repeated courses, bringing the total dosage up to 5 or 10 gm. At the same time Runge warns that entirely refractory cases are sometimes encountered. His experience has shown further that large doses may in some cases fail to induce a remission and the disease may grow more severe and terminate fatally. He gave the salvarsan at five-day intervals but some recent experiences warn that an eight-day interval would be safer. It is often impossible at present to differentiate with certainty between cerebral syphilis and paresis, which renders it all the more necessary, he declares, to treat the patient vigorously with salvarsan at the first onset of symptoms, testing the tolerance cautiously. The paralysis did not seem to be modified by the salvarsan in 42 per cent. of the cases, and in 4 cases the course of the disease seemed to be accelerated although the dosage had been only 0.2 to 1.5 gm. Possibly, better results might have been attained finally if the medication had been pushed farther.

64. **Acute Ileus from Spasm.**—Fromme reports two cases of ileus in which the laparotomy disclosed a spastic constriction as the cause of the trouble. He knows of only twenty such cases on record, exclusive of lead-poisoning cases. The first patient was a boy of nearly 12; the severe pain came on suddenly during a running race. The small intestine was found contracted over quite a stretch, and pale; the entire small intestine was rather small. During the operation the contraction subsided and there were no further disturbances or pain. The second patient was a woman of 55, and in this case also the laparotomy, done on assumption of mechanical ileus, put an end to the spasmodic contraction and all trouble ceased. The woman's small intestine was contracted over a stretch 10 or 20 cm. long at four different points. The patient had broken several ribs four days before the spastic ileus came on. The spastic contraction liable to follow a laparotomy is probably of this same class of cases, all traceable to some injury of the intestines from within or without. Morphin and atropin are the main reliance in treatment, but unless one is certain of the spastic nature of the trouble it is dangerous to give morphin with ileus as liable to mask the clinical picture. The spastic contraction may be the precursor of invagination and may outlast it. This occurred in a case in his experience, the infant dying from the persisting contraction after the invagination had been corrected by a laparotomy. In two other cases a girl of 8 and a young man had several stretches of intestine contracted and the bowel was found invaginated at two or more points. The young man's appendix had been removed for an abscess a few months before and the child had been taken suddenly sick after eating nuts. The laparotomy for

the ileus in each case was followed by complete recovery. There had been no blood in the stools in either case and no adhesions had developed.

65. **Secondary Anesthetic Fatalities.**—Keil has been analyzing and classifying 4,000 cases with general anesthesia given by various technics. There was no immediate fatality in any instance for which the anesthetic could be incriminated, but there were ten deaths which he thinks were the direct result of later injury from the anesthetic used. The first symptoms were observed the second day, with death the fourth day. The patients were between 38 and 61. His experience testifies to the smaller amount of anesthetic required when a mixing apparatus is used instead of the drop method. Preliminary scopolamin-morphin did not display any advantage over the ordinary technic in respect to lesser requirement of the chloroform and ether. The exact figures of the average amount of anesthetic used with each method for the total 4,000 cases are cited.

Medizinische Klinik, Berlin

May 17, X, No. 20, pp. 837-878

69 *Nature of Whooping-Cough and Conditions in regard to Contagion. (Keuchhusten.) E. Feer.
70 Roentgen and Radium Therapy of Cancer. A. Lorey.
71 Gangrene of the Lungs; Three Cases. Kaiser.
72 Benzol in Leukemia. L. Boehm.
73 Physical and Mental Disturbances Persisting after Strangulation. L. Sztanojevits.
74 Courses of Mineral Water in Treatment of Bronchiectasia. Stemmler.
75 *Chronic Joint Disease Resulting from Metabolic Disturbances. (Die durch Stoffwechselstörung bedingten chronischen Gelenkerkrankungen.) S. Gara.
76 Balneotherapy and Pediatrics. Krone.
77 Arsacetin Glycosuria. K. Georgiewsky and B. Chmelnitsky.

69. **Whooping-Cough.**—Feer gives statistics which show that whooping-cough is twice as deadly as measles for young infants and six times deadlier than diphtheria (Bavaria, 1893-1902). The Basel statistics show that young infants contracted whooping-cough five times more than measles and scarlet fever and nearly ten times more than diphtheria (1875-1891). Whooping-cough maintains its lead in prevalence over the other diseases up to the age of 5. In 1900 there were 14,000 deaths from whooping-cough in the German empire, the same figure as for diphtheria. And yet, with all this experience, it is still a question whether whooping-cough is contagious during the whooping state or not. In Feer's own experience the institutional epidemics always originated from cases that had not reached the whooping stage. Weill of Lyons thinks that after one week of the paroxysmal cough at farthest there is no more danger of infecting others. He analyzed 104 cases very carefully from this standpoint, and his experience since has confirmed his view that isolation is unnecessary as a rule at this stage.

The assumption that contagion occurs only during the catarrhal stage explains why the disease runs through a family but why there is so seldom contagion after the whooping child has entered the hospital while an epidemic is almost certain to develop if a child in the catarrhal stage enters the hospital and begins to whoop later. He has never known of an instance of contagion from clothes or from sleeping in a room after a whooping-cough patient. Direct contact seems indispensable. Healthy carriers may play an important rôle. He says that no remedy has proved its usefulness but that much can be accomplished by tranquilizing the patient. Sometimes replacing an over-anxious nervous mother with a well-poised and capable attendant may have a remarkable influence for the better.

75. **Thyroid Treatment of Chronic Joint Disease.**—Gara reviews what is known of chronic joint affections developing on a basis of metabolic disturbances, gout, gastro-intestinal derangement, etc. He has encountered a special group of cases of chronic joint disease accompanied by various symptoms suggesting neurasthenia and disturbance in the genital sphere besides the rheumatic joint affection. Closer study of this group of cases during the last three years has shown that the thyroid is always more or less enlarged. Discovery of this suggested that abnormal functioning on the part of the thyroid might affect the functioning of the ovaries. This assumption explained at once all the different symptoms observed, from the nervous palpitations and restlessness to the amenorrhea or dysmenorrhea, all of which had proved refractory to ordinary measures. The evidence which Gara presents makes a good plea on behalf of the thyroid origin and necessity for treatment on this basis in a certain proportion of cases of chronic articular rheumatism. He has encountered 132 cases of the kind, all but 11 in women from 16 upward; 43 were over 45. This "thyroid" group formed about 20 per cent. of his cases of chronic "rheumatism" of the joints. He practices at a spa, and consequently sees the patients only while they are taking the waters, so he has no opportunity to apply treatment on these premises. He urges general practitioners to be on the lookout for such cases and to give them systematic thyroid treatment on the above basis.

Münchener medizinische Wochenschrift

May 12, XLI, No. 19, pp. 1041-1096

78 Derangement of Ovary Functioning with Myoma in the Uterus. (Störung der Eierstocksfunktion bei Uterusmyom und einige strittige Myomfragen.) A. Mayer and E. Schneider.
79 Deposits of Albumin in the Liver after Ingestion of Albumin. (Eiweissspeicherung in der Leber nach Fütterung mit genuinem und gänzlich abgebautem Eiweiss.) Berg.
80 *Shape of Stomach with Exaggerated Vagus and Sympathetic Tonus. P. Klee.
81 *Treatment of Malignant Disease with Cancer Extract. (Behandlung maligner Geschwüre mit Tumorextrakt.) H. Lunckenbein.
82 Paratyphoid in Munich Children; Ten Cases. F. Breuning.
83 *Poliomyelitis in Orphan Asylum. (Anstaltsendemie von Heine-Medinscher Krankheit.) H. Kern.
84 Barium Sulphate in Roentgenoscopy. (Bariumsulfat als Kontrastmittel in der Röntgendiagnostik des Magendarmtraktus.) E. Crone.
85 Deep Radiotherapy. (Zur Frage der Strahlentiefentherapie.) J. Rosenthal.
86 Extreme Ankylosis of the Spine; Alleged to be Forty-First Case on Record. Wenzel.
87 Principles for Mechanical Treatment of Subcutaneous Injuries of the Legs. A. Ritschl.

May 26, No. 21, pp. 1153-1208

88 *Treatment of Tuberculosis with Friedmann's Vaccine. A. Schittenhelm and G. Wiedemann.
89 Bacteriologic Findings with Lymphogranulomatosis. H. Verploegh and others.
90 The Blood-Picture of Acute Leukemia as a Transient Symptom. C. Klieneberger.
91 *Keeping Pneumonia Patients Out of Bed. (Das "Ausserbett" Behandlung der Pneumonien.) C. Widmer.
92 Sacral and Local Anesthesia for Laparotomies. M. Traugott.
93 The Protective Ferments. (Das Wesen der Abwehrfermente bei der Abderhaldenschen Reaktion.) A. Hauptmann. (Zur Frage der sog. Abwehrfermente.) L. Flatow.
94 Treatment of Phimosis in Children. E. Rominger.
95 Intramuscular Injection of Neosalvarsan. H. E. Kersten.

80. **Shape of the Stomach with Exaggerated Vagus and Sympathetic Tonus.**—Klee gives a number of skiagrams to show the typical changes in the shape of the stomach of cats when the nerves connected therewith were subjected to cold or to heat or were severed.

81. **Cancer Extract in Treatment of Malignant Disease.**—Lunckenbein states that the theory of the protective ferments has explained the unmistakable benefit derived from intravenous injection of cancer extract. The general health improves even in advanced cases, and many inoperable growths have retrogressed until they could be successfully removed. With no other method of treatment to date do the patients show such a remarkable and speedy change for the better as with this tumor-extract treatment. The serodiagnosis after this tumor-extract treatment may show when the cancer has actually been conquered or whether merely transient improvement has been realized. As this method of treatment is a kind of vaccination, the production of the protective ferments being the task of the organism being treated, the technic and estimation of the progress of the case are not always easy. He uses mammary cancer extract, having found that the outcome was apparently the same whether the patient's own cancer material or that from another person was used; the nature of the cancer also seemed to be immaterial. The course of treatment must be

long and persevering. He has sometimes noticed that after a certain length of time the organism seems to have reached the limit of its capacity for protective-ferment production, and the case enters on a stationary phase or begins to go down. When this happens, every effort must be made to raise the tone of the general health so that it can go on with its ferment-production task. Remarkable results are sometimes accomplished in this way. Lunckenbein practices at Ansbach, and his statements are based on his experiences in forty cases.

83. **Epidemic of Poliomyelitis in Orphan Asylum.**—There were only five cases, but four developed practically all on the same day and three of the children were isolated at once. The symptoms were so mild that they were not recognized at once in the fourth child and it was not isolated until the fifth day. The fifth case developed three weeks later and evidently from contact with the case that had been unrecognized at the very first. Only one of the children has entirely recovered; the others still have more or less paralysis.

88. **Treatment of Tuberculosis with Friedmann's Remedy.**—Schittenhelm and Wiedemann report from the medical clinic at Königsberg 40 cases of various forms of tuberculosis in which they have applied Friedmann's remedy, supplied to them free of charge. They review the history of the remedy to date and give full details of their 40 cases. One patient was a man of 32 with Addison's disease who was given the *Simultaninjektion*—as advised by Friedmann in a letter. The temperature ran up to 104, the pulse to 110, and the patient vomited incessantly and rapidly grew weaker, dying the third day. This unfortunate occurrence, they state, was unmistakably the consequence of the febrile reaction to the injection which the debilitated organism was not able to stand. In the 25 cases of pulmonary tuberculosis there was no improvement in the objective findings but 5 showed a relative improvement, the temperature dropping, the amount of sputum growing less in some and certain subjective symptoms and the general health showing some benefit. On the other hand, a much larger number of patients showed no influence from the treatment and 9 grew constantly worse, including 2 in whom the condition became aggravated directly after the injection. A favorable influence was apparent in 3 cases of tuberculous rheumatism of the Poncet type and in a few cases of tuberculous joint processes, the patients showing rapid improvement, notwithstanding the suspension of all other measures. Tuberculous processes in the kidneys were apparently not influenced in the least. Previous treatment with another kind of tuberculin did not seem to affect the action. Friedmann declares that cases in which some other tuberculin has been given often prove refractory to the first injection of his remedy; they display no essential improvement after the first injection but do after the second. This should be given after an interval of four or five weeks. One of the cases here reported was treated on this advice and the second injection had an absolutely aggravating deleterious influence.

They add: "To the question whether the Friedmann remedy is superior to other specific measures for treating tuberculosis the answer according to our results can be only in the negative. We believe positively that the few apparently favorable results which we have to chronicle in pulmonary tuberculosis and Poncet could have been attained with other measures. But we regard the dangers of the treatment as so great that we shall not apply it further. (*Wir halten die Gefahren der Behandlung für so gross, dass wir sie nicht weiter üben werden.*) This judgment is not qualified by the favorable result in the 3 joint cases. Such observations call for experimental following up of the subject; but they cannot justify the further therapeutic application of the remedy which has won discrepute in the majority of the cases by its failure to benefit and its harmfulness."

91. **Keeping Pneumonia Patients out of Bed.**—Widmer relates that ten years ago at a conflagration in a village the men fighting the fire were so chilled and exhausted that between the ninth and thirteenth days thereafter eight developed extremely severe pneumonia, delirious from the first day. As the distances between the farms were so great he was unable to spend much time with any one patient, and the families were in great distress with their delirious sick men. To aid them in tending the sick at night, Widmer had the sick men dressed and allowed to be up at night. To his surprise he found that great improvement in the delirium and in the condition generally followed as soon as the men were thus dressed and up. Analyzing the conditions convinced him that the subconsciousness called into play by the acts of dressing, walking about and especially by rocking in a rocking chair, steadied the higher brain functioning and this in turn steadied and regulated the blood-pressure and other vital processes. Since that time he has made a point of thus calling on the subconsciousness in treatment of pneumonia and has found it a great help in fifty-two cases thus treated. He compares conditions to the difference in the effect when water is poured into a glass held in the hand in a moving railway car; it can be poured without spilling, but if the glass is standing on a solid table, it is almost impossible to pour the water into it without spilling.

Wiener klinische Wochenschrift, Vienna

May 14, XXVII, No. 20, pp. 645-692

96 *The Process in the Brain with an Epileptic Seizure. (Gehirnvorgänge beim epileptischen Anfall.) I. P. Karplus.
97 Pathogenesis of Auricular Fibrillation. (Flimmerarhythmie.) C. J. Rothberger and H. Winterberg.
98 Variability of Makes of Hexamethylenamin. (Qualitative Unterschiede des Formaldehydgehaltes im Urotropin und Hexamethylentetramin.) O. Sachs.
99 *Clinical Significance of Quantitative Test for Albumin in Sputum. M. Melikjanz.
100 Necessity for Graduation of Doses of Sunlight, etc., in Heliotherapy at the Seashore. H. v. Schrötter.

May 21, No. 21, pp. 693-740

101 Angina Pectoris. L. Braun.
102 Case of Rumination with the Roentgen Findings of Intermittent Hour-Glass Stomach. E. Schütz and S. Kreuzfuchs.
103 The Diet in Certain Alpine District. (Ueber die Ernährung der Senner auf zwei Hochalpen im Bezirk Innsbruck-Umgebung.) L. E. v. Ceipek.
104 Heliotherapy in Austria. M. Jerusalem.
105 *Friedmann's Remedy for Tuberculosis. Friedländer and others.

96. **Experimental Epileptiform Seizures.**—Karplus found in experiments on dogs and monkeys that slitting the corpus callosum its entire length did not prevent general epileptic convulsions when weak electric stimulation was applied to some circumscribed area of the cortex.

99. **Albumin in the Sputum.**—Melikjanz summarizes ten cases of pneumonia to sustain his previous statements in regard to the importance of quantitative estimation of the albumin in the sputum. The later it appears and the later it disappears again, the graver the prognosis. The amount is also proportional to the severity of the lung affection. Large amounts long persisting speak for tuberculosis.

105. **Friedmann's Remedy for Tuberculosis.**—Friedländer reports the case-histories of eight children with tuberculous bone or joint affections in his service given the Friedmann treatment by Friedmann's assistant. A general reaction was observed in all, but it was slight in three cases. The other children had a very considerable temperature reaction and impressive tachycardia, and their subjective reaction, especially the following night, could not be lightly regarded. There was no local reaction but no benefit of any kind followed. The hip-joint disease in one case grew worse but Friedländer does not ascribe this directly to the Friedmann remedy so much as to the neglect of the old and tried orthopedic fixation which was omitted in hopes of benefit from the Friedmann remedy. He exonerates the remedy also from any share in the development of facial paralysis soon after its application in a case of spondylitis. He is confident, however, that the remedy did not display the slightest specific efficacy in his eight cases; and he will decline to use it further even if the objections recently raised against the constancy and purity of the remedy are dissipated.

This communication supplements several others presented at the meeting of the Vienna Medical Society, May 15, of

which a full report is given in the Society Proceedings Department of the *Wochenschrift*. All report "no benefit" and some describe actual harm done by the remedy. It had been administered in all cases by Friedmann himself. One of Bachrach's 5 patients had an isolated mild chronic tuberculosis of one kidney. After the Friedmann remedy had been given, the bladder lesions progressed rapidly and became much aggravated, and the kidney showed a fresh miliary eruption when it was finally removed after waiting three months for any possible benefit from the treatment. The conditions in this case were the most favorable possible, but aggravation rather than benefit was all that was realized. No benefit was observed in the other urogenital cases.

Jungmann reported similar discouraging results in 8 cases of lupus; no benefit has been apparent in the four or five months to date and in 3 cases the lupus has spread materially, the new patches promptly ulcerating. (A few of these cases were treated by Friedmann's assistant.)

Kovacs reported 7 cases of pulmonary tuberculosis. The course was not modified for the better in any instance. One patient died two weeks after the intramuscular injection and a subacute and acute miliary tuberculosis was found in the lungs and some other organs. He called special attention to this case as several others are on record in which this was observed, although it is of course impossible to prove any connection between the remedy and the miliary tuberculosis developing later.

Neumann commented on the way in which Friedmann in determining the indications pays heed only to the subjective symptoms and ignores the stage and extent of the tuberculous process. This rendered particularly noticeable the experiences in Ortner's service in that the subjective disturbances became much worse after injection of the Friedmann remedy. There was but slight reaction to the intramuscular injection (2 cases), but in the 6 intravenously injected cases severe injury followed. The temperature ran up to 104 F. in all and still higher in one (40 and 40.5 C.) and kept at this height for three days, accompanied by intensely severe headache, vomiting and brain symptoms. At the same time severe degeneration of parenchymatous organs was evident; the liver and spleen became much enlarged and tender; there was pronounced urobilinogenuria but elimination of galactose kept within normal range. In one case there was pronounced jaundice; in another subicterus of the conjunctiva. Albuminuria was evident in nearly every case; with tube-casts in one. The muscles became also intensely sensitive to contact, especially in the calf. The appetite was also poor for months, and for weeks there were repeated nausea and vomiting. All complained for months of a dull headache. The heart seemed to feel the deleterious effect most. The blood-pressure dropped 20 or 30 mm. mercury, and did not return to normal for two weeks. The heart became dilated, and systolic murmurs over the initial valve are audible, accompanied by palpitations and pains in the heart—all these symptoms persisting unmodified by valerian or bromids during the five months to date, and influenced only by strophanthus or digitalis. One elderly woman with a goiter had never had cause to complain of her heart before, but after the Friedmann injection she developed a perpetually irregular pulse with extreme weakness of the heart, edema in the legs, and cyanosis, requiring camphor and a course of digitalis, and the heart has not recuperated since.

In short, Neumann concluded, speaking for Ortner, the remedy is not so harmless as Friedmann would have us believe. The tuberculous processes were aggravated and injury of parenchymatous organs was evident, persisting for months and affecting the vital organs. The application of the remedy should be absolutely denounced.

Büdinger reported no benefit in his 4 cases and considerable aggravation in one. Föderl had negative results in all but one of his 5 cases. Nephrotomy had been done before the injection in this case and the operation was more than probably responsible for the improvement that followed. Improvement was noticed after the operation alone in a similar case not given the Friedmann treatment. In one case the injection was followed with fever, rapid pulse, vomiting and diarrhea.

Policlinico, Rome

May 1, Medical Section, No. 5, pp. 193-244

106 *Fat Necrosis in and Around the Pancreas. C. Verdozzi.
107 Primary Sarcoma of the Liver. (Sui sarcomi primitivi del fegato e su la migliore conoscenza anatomo-clinica delle neoplasie epatiche.) G. Pisano. Commenced in No. 4.
108 *Thick-Film Technic for Microscopic Work in Differential Diagnosis. P. Bosco.

106. **Fat Tissue Necrosis in and Around the Pancreas.**—Verdozzi has recently encountered a case of acute hemorrhagic pancreatitis and one in which there were only minute foci of fat necrosis in the interstitial tissue of the pancreas. He gives a colored plate of the findings and reviews the history of fat necrosis in this region and discusses the pathologic anatomy and syndrome. The attack came on before breakfast in one case; in the other after a hearty meal. In the latter case there was a history of recurring attacks of abdominal pain and vomiting, subsiding after a few days, and the pancreas showed signs of chronic inflammation. The temperature was subnormal in both the women; they were 68 and 78 years old and the first died in three, the other in thirteen days. The localization of the pain in the epigastrium and the meager findings on palpation in contrast to the grave general condition and distress, pointed to pancreatitis. The various hypotheses advanced to explain the fat necrosis are compared; Bignami's theory that the trouble is analogous to a peptic ulcer has much to sustain it.

108. **Thick Films in Microscopic Diagnosis.**—Bosco lauds the thick film technic as a great aid in diagnosis of malaria and relapsing fever.

Brazil-Medico, Rio de Janeiro

XXVIII, Nos. 16-17, pp. 153-172

109 *Endemic Adenomycosis. II. E. Dias.
110 *Yellow Fever. (Tratamento racional da febre amarella.) P. Valladares.
111 Causes of Fatalities at Operations. (Das causas do exito lethal nas operaçoes cirurgicas.) R. C. Prevost.
112 Brazilian Ornithostrongylus Parasites of Cattle and Fowls. (Tricostrongylinae brazileiras.) L. Travossos.
113 The Larvae of the Fly Does Not Feed Habitually on Cadavers. (A larva da mosca domestica é habitualmente necrophaga?) O. Freire.

109. **Endemic Adenomycosis.**—Dias here gives the description of the fungus causing the affection to which he called attention recently, as summarized in THE JOURNAL, May 30, p. 1765. He has named the fungus the *Adenomyces cruzi*.

110. **Yellow Fever.**—Valladares gives a number of reflections and suggestions based on the most recent progress in medicine which has thrown light on the symptoms seen in the yellow-fever syndrome for which the ductless glands are responsible. There is much evidence to show that, the acute phase once past, the acutely defective or perverted functioning of the adrenals in particular dominates the clinical picture. Treatment should aim to restore the lacking internal secretion. He proposes therefore as the logical treatment of yellow fever, venesection and saline infusion, lumbar puncture and the usual measures for revulsion. The usually early insufficiency of the liver should be combated with alkalines, sodium benzoate, ether and cold enemas twice a day. As soon as there are signs of defective adrenal functioning, epinephrin should be given systematically. This should be followed by serum from the renal vein of the goat, according to Teissier's technic (described in THE JOURNAL, Nov. 14, 1908, p. 1738), when symptoms suggest uremia or impending anuria. Still another measure to be systematically applied is baths if the temperature goes above 39 C., with other symptomatic measures as needed.

Hygiea, Stockholm

LXXVI, No. 8, pp. 449-512

114 Unilateral Eye Symptoms in Exophthalmic Goiter. (Var Landströms förklaring till uppkomsten av ögonsymtomen vid morbus Basedowi riktig?) A. Troell.
115 Splenectomy in Treatment of Pernicious Anemia. R. Dahl.